TECHNOLOGY DEPT:

MMERCIAL R JOURNAL

OCTOBER 1944

OCT 14 1944



Helping to heat America for 40 years

Coal-oil-gas-electricity! Through four decades, Reo has helped make possible America's broad use of these rich sources of winter warmth and comfort. To ay, trucks as well as fuel must be conserved, bringing a flood-tide of very and service problems...and it is at a time like this, especially, the stamina and dependability of Reo find a warm spot in the hearts ard-pressed operators. Ask your Reo dealer about the limited ernment release of new war-toughened Reos for essential service.

O MOTORS, INC., LANSING 20, MICHIGAN



· AMERICA'S TOUGHEST TRUCK · 194

Factory Branches in Principal Cities

DEPENDABLE! YEAR AFTER YEAR AFTER YEAR

THE WILLETT COMPANY

NEW TRUCKS AVAILABLE

OP die

way min reg

th

The Government has authorized a limited number of new Dodge Job-Rated trucks for civilian hauling. See your Dodge dealer at once for trucks to fit your job. See him, too, for dependable truck and car service by trained mechanics using factory-engineered parts!

DODGE DIVISION OF CHRYSLER CORPORATION

9 P.M., E.W.T

Gentlemen:

Here's a Dicture of one of our podge trucks. and we've found them uniform

Here's a Dicture of one of our podge trucks. and we've found them uniform

The state of one of our podge trucks. and we've found them uniform

The state of our podge trucks. and we've found them uniform

The state of our podge trucks. BUY MORE BONDS!

Dodge Division Detroit, Michigan

Gentlement

700 SOUTH DESPLAINES STREET
CHICAGO 7
Telephone Monroe 1492

many more before the war ends.

In all, we operate fractory and we keep entirely satisfied trucks.

In all, we operate fractory and we see on these Dodge trucks.

Operate fractory and we see on these Dodge trucks.

Operate fractory and we see on these Dodge trucks. cost-per-sile and cost-per-ton figures on these Dodge trucks to the Inst is no the There is no We the me set them for years and, as I said, we now have 30 or them we set them them are dependently as it is now have 30 or them we set them them are the set of them. Howard L. Wille.

July 14, 1944

111...18 WILLETT 209,143 MILES

Fit the Job...Last longer

America Will Never Forget the Splendid War Record of Its 4,500,000 Trucks...and Their Millions of Drivers...on the Vital Home Front!



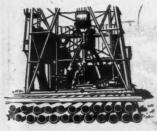
In the eleven western states, an estimated 90 per cent of all franchise-operated, long-line, heavy-duty, diesel-powered trucks on the highways—freight and tank—are Cummins Diesel-powered. Diesel truck registrations in California alone number more than 4,400.



In the Northwest Woods, Cummins Diesels do the complete job—from show to siding. They power yarders, loaders and tugs... trucks that handle up to 240,000 pounds (three carloads). In this service, Cummins Diesels are the symbol for "cheap logs."



In the commercial fishing fleets of the Pacific, Atlantic and Gulf coasts, and in all types of work boats and pleasure craft, Cummins Marine Diesels—propulsion engines and generating sets alike—have become a byword for dependable, low-cost performance.



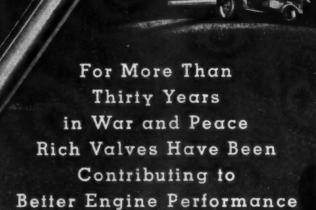
In the vast Mid-Continent area, the world's greatest oil producing territory, Cummins Dependable Diesels power more rotary and cable tool drilling rigs and oil well service units than any other make of diesel engine.

Step by Step

Tremendous weight and size greatly limited the uses of early-day diesels. Twenty-six years ago, the builders of Cummins Diesels decided to do something about that—and did! Step by step, and with each step first tested and proved on the job, they simplified design . . . improved construction processes . . . turned to lighter, stronger materials . . . steadily boosted the rpm. That, briefly, is the story of the modern Cummins Diesel . . . the original high speed diesel that, since 1932, has won its spurs on the toughest, heavy-duty jobs . . . in virtually all types of heavy-duty equipment, automotive, industrial, marine. For tomorrow, continued refinements in diesel manufacture promise a Cummins Dependable Diesel that will do your job still cheaper, still faster, still longer. So plan now to standardize on Cummins Diesel power for the equipment you will build or operate after the war. CUMMINS ENGINE COMPANY, INC., Columbus, Indiana.



ont!



RICH

are manufactured by the Wilcox-Rich Division of Eaton Manufacturing Co., and distributed exclusively by the

McQUAY-NORRIS
JOBBERS



Says Permatex Pete...

Says Permatex Pete...

Says THEY'LL GET SMOOTHER ACTION

TELL GAR OWNERS THEY'LL INCLUDE ONE QUART

TELL GAR POWER IF THEY'LL INCLUDE ONE QUART

AND GREATER TOOM-OY! IN EVERY OIL CHANGE

OF Permatex

Consider the benefits that motors derive from Permatex Toon-Oyl:

Carbon-gum deposits are removed without clogging oil pump screens.

That is one important fact!

The resistance of oil films to pressure is greatly increased and therefore all lubricated parts obtain greater protection.

That is a second important fact!

Sludge and acid formation are greatly decreased and therefore all metal parts, particularly bearings, last longer.

That is a third important fact!

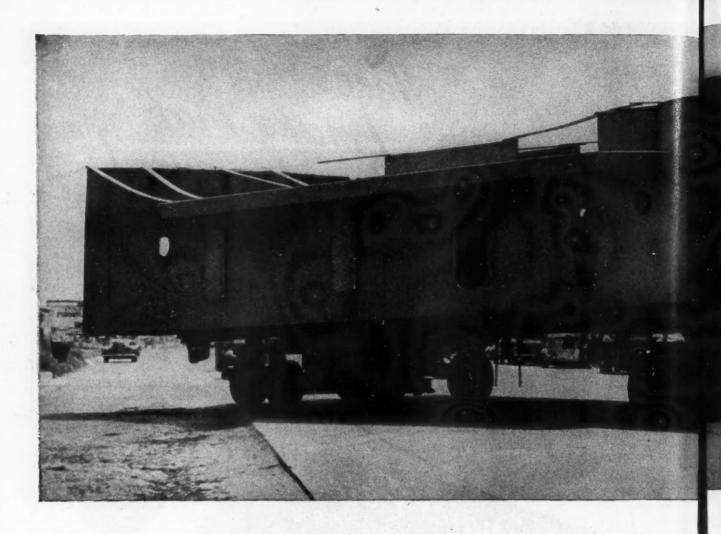
No wonder there is faster pick-up, smoother motor operation, greater power and increased mileage per gallon of gas . . . with Permatex Toon-Oyl in the crank case!

Send for Manual . . . "Three Products in One". Gives much useful information.

PERMATEX COMPANY, INC. Brooklyn 29, N. Y., U. S. A.

OCTOBER, 1944

Use postage-paid card inserted in this issue for free information on advertised products



Shipping TRUCK



TUNE IN THE TEXACO STAR THEATRE EVERY SUNDAY NIGHT-CBS



HUGE, pre-fabricated ship sections, like the deckhouse in the picture, are transported by truck 35 miles for production-line assembly at a California shipyard. The finished vessels are 175-footers for the Army.

Delivering big loads on schedule demands dependable engine performance. To insure this, fleet operators all over the country lubricate with Texaco.

Texaco D-303 Motor Oil, for example, has the properties of detergency and dispersion. Detergency keeps piston rings and engine parts clean. Dispersion holds deposit-forming materials in suspension until drained at oil-change time. D-303 protects modern bearings and prevents scuffing of rings, pistons, cylinders, etc.

For quieter-running, longer-lasting trans-

mission and differential gears, use Texaco gear lubricants.

So effective have Texaco lubricants proved that they are definitely preferred in many fields, a few of which are listed below.

Texaco Lubrication Engineering Service is available to you through more than 2300 Texaco distributing points in the 48 States. The Texas Company, 135 East 42nd Street, New York 17, N. Y.

THEY PREFER TEXACO

* More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand * More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.

* More locomotives and railroad cars in the U. S. are lubricated with Texaco than with any other brand.

* More revenue airline miles in the U. S. are flown with Texaco than with any other brand.

Lubricants and Fuels

FOR THE TRUCKING INDUSTRY

HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

^{*} More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.

AUTO-LITE ELECTRICAL Equipment

SERVICE TODAY...

MEANS FRIENDS TOMORROW

WAR

BONDS

RIGHT now the gigantic job of keeping the goods of war rolling on schedule provides an excellent opportunity for proving what you can do under pressure. Never before has there been so great a chance to win lasting friends... through service.

The Electric Auto-Lite Company, as the world's largest independent manufacturer of automotive electrical equipment, welcomes the opportunity of helping America's fleet owners build and maintain a stable reputation for

getting goods through on time. Through the years, the dependability and low cost in use of Auto-Lite automotive electrical products have made their choice by leading engineers . . . a traditional practice.

SARNIA, ONTARIO

THE ELECTRIC AUTO-LITE COMPANY

TOLEDO, 1, OHIO

AUTO-LITE

SPARK PLUGS + STARTING
LIGHTING + IGNITION
BATTERIES + WIRE & CABLE

TUNE IN "EVERYTHING FOR THE BOYS" STARRING DICK HAYMES - EVERY TUESDAY NIGHT - NEC NETWORK

For Forty Years a Dream

TODAY MARKS the introduction of the most important advance in tire making since America's synthetic rubber program was launched.

For 40 years—ever since the rubber industry learned that mixing carbon black with rubber would make tires wear longer—chemists have dreamed of some method of doing this mixing while the rubber was still in latex (liquid) form.

To make this dream come true The General Tire & Rubber Company assigned its large corps of scientists to intensive research. It entered into agreement with the chemists of Carnegie Tech and Purdue Universities. It expanded its own research staff by the addition of many experienced scientists.

AND THESE SCIENTISTS CAME THROUGH

The long sought method was found and the result is being introduced to the public today.

It means to the average motorist that he will get better tires sooner. It means to the truck owner that the critical transportation problem confronting him will be greatly eased.

It is a great contribution to the rubber industry . . . and because it is so important General is turning over this scientific secret of compounding to all competitive companies . . . and thus every tire user will be benefited.

In its government-owned synthetic plant at Baytown, Texas... General Tire now is mixing carbon black with synthetic rubber in liquid stage.

America can look forward to a substantial increase in the number of synthetic tires produced . . . and to a better tire . . . because:

- ... milling time is reduced one-third
- ...consumption of essential power is reduced 20%
- ... manpower needed for milling is reduced sharply, with men freed to operate tire building machines
- ... mileage-adding carbon black is evenly dispersed throughout the rubber... giving equal wearing qualities everywhere.

so important is this new development that highest priorities were granted to permit immediate production. Millions of pounds of this new rubber will be produced by General Tire at Baytown.

THE DREAM OF RUBBER CHEMISTS has come true. Great new avenues of research have been opened. From this beginning, new processes . . . and better rubbers . . . can be expected in the near future.

THE GENERAL TIRE & RUBBER CO.

AKRON, OHIO • WABASH, INDIANA • HUNTINGTON, W. VIRGINIA BAYTOWN, TEXAS • BARNESVILLE, GEORGIA • WACO, TEXAS



Today's operating conditions are tough on fleets. That's why you need to do everything possible to keep yours in first-class shape.

One way to make your fleet last longer is to use the *right combination* of piston rings—for each specific *make and model* of car or truck . . . for the particular *condition* of every engine . . . for the *type of service* to which each engine is subjected.

And that's the combination Perfect Circle engineers recommend after a free analysis of your fleet is made.

Under the new Perfect Circle Plan for Fleet Maintenance, it is possible to choose the *right combination* from more than 100,000 different combinations. Results are longer periods between overhauls... better performance...

Co-operation with ODT Preventive Maintenance Service Helps Shorten the War lower fuel and oil costs . . . longer service from piston rings, pistons, and cylinders.

A Perfect Circle Engineer will gladly cooperate with you in making this survey. There is no obligation. Call your Perfect Circle distributor, or write The Perfect Circle Companies, Hagerstown, Indiana, U. S. A., and Toronto, Ontario, Canada.



CHAMPION SPARK PLUGS

CENTRAL N. Y. COACH LINES, Inc.

Franchise Omnibus Line UTICA

SYRACUSE

... LITTLE FALLS

UTICA, N. Y.

Champion Spark Plug Co. Toledo, Ohio

June 12, 1944

Gentlemen:

We operate sixty-five buses on various lines, including intercity, suburban and city transportation. These lines require buses suitable for their particular type of service, so we have several different types of equipment in our service.

Champion Spark Plugs have contributed greatly to the reliability and efficiency of operation, particularly ander the heavy stress of increased riding during the past eighteen months. We are pleased with the service your plugs have given and are giving, and their contribution toward the maintenance of bus transportation.

Very truly yours.

CENTRAL N. Y. COACH LINES, INC.

annon c Harrison S. Sweet,

HSS:R

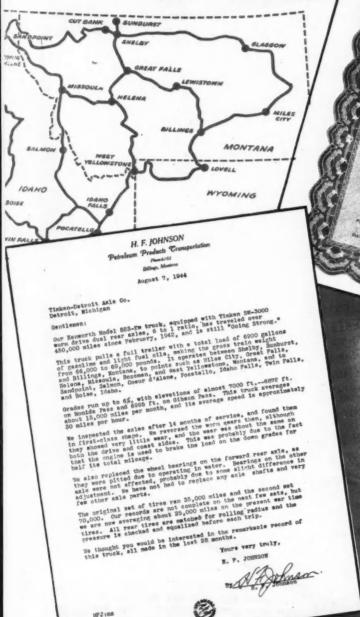
President

Today, as never before, the importance of good, dependable spark plugs to efficient, economical fleet operation is becoming more and more apparent. It's no wonder, therefore, that you'll find the majority of successful fleet operators using dependable

Champions. Comparative tests, made by fleet owners themselves, have proved beyond question that Champion Spark Plugs give better, more dependable, more economical performance. Install Champions in your fleet to "Keep 'Em Rolling Longer."

TOO BIG-NO WORK TOO TOUGH - for CHAMPIONS NO

450,000 MILES OF WARTIME SERVICES

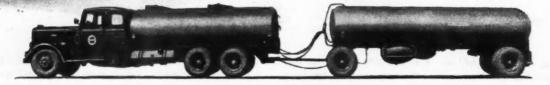




Mileage equal to 18 trips around the equator in less than two and a half years is the amazing record of this H. F. Johnson truck, operating over mountain roads in Montana and Idaho. Only a sturdy truck, skilfully driven and expertly maintained, could compile such a phenomenal record.

A Timken SW-3000 worm drive dual rear axle unit, original equipment on this truck, has contributed its full share to this wartime highway transport record.

Timken is proud to present the above Citation for Extraordinary Highway Transport Service to Mr. Johnson. Similar citations are being awarded to other operators, for outstanding performance and maintenance records, as the facts come to our attention.



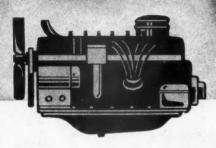
38 YEARS OF AXLE ENGINEERING LEADERSHIP



TIMKEN AXLES

THE TIMEEN-DETROIT AXLE COMPANY, DETROIT 32, MICHIGAN WISCONSIN AXLE DIVISION . OSHKOSH, WISCONSIN

Stanolube HD passes many tests to prove it will keep engines clean



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YOU WOULDN'T OPERATE a truck engine for 30,000 miles with no oil change—or deliberately keep intake air and water temperatures excessively high—or overload an engine during the run-in period. Yet, these are some of the "features" of the tests designed to qualify and evaluate heavy-duty engine oils.

These tests, described at the right, are far more severe than any service you will require of an oil. Yet, Stanolube HD rates far above average in all of them. In fact, no motor oil consistently rates as high as Stanolube HD in *all* qualities which a heavy-duty oil *must* have.

To find out what this means in reduced carbon, varnish, and engine deposits—fewer overhauls and lower maintenance—let a Standard Oil Automotive Engineer help put Stanolube HD to work in your fleet. Call your nearest local Standard Oil Company (Indiana) office, or write 910 South Michigan Avenue, Chicago 80, Illinois, for the Engineer nearest you. In Nebraska, write Standard Oil Company of Nebraska at Omaha 2.

Recognized tests of Heavy-Duty oil

- 1. 500-Hour Endurance Test—determines the ability of an oil to eliminate ring sticking, piston skirt deposits, port fouling, and bearing corrosion. This 500-hour test is equivalent to operating a truck under a *full load* for 30,000 miles.
- 2. 480-Hour Detergency Test determines the ability of an oil to reduce wear, deposit accumulation, and ring sticking under long-time service conditions.
- 3. "Scratch" Test—measures the load carrying quality of an oil under run-in conditions and heavy loads.
- 4. "Hot-Box" Test—measures the protection an oil gives against bearing corrosion and deposits under conditions designed to increase deposit formation.
- 5. 36-Hour Accelerated Stability and Bearing Corrosion Test evaluates these characteristics of an oil in a gasoline engine under severe overloads at high temperatures.

heat-proofed
Stanolube H D

Gasoline Powers the Attack ... Don't Waste a Drop!

STANDARD OIL COMPANY (INDIANA)

STANDARD

* FLEET CONSERVATION SERVICE

BRAKES, LIKE WATCH MOVEMENTS, NEED BALANCE



BALANCED BRAKES HAVE WHAT-IT-TAKES

A watch is as accurate as its balance-wheel, or governor, which regulates the whole movement. Automotive brakes, too, are as accurate as their balance . . . in materials, application, and brake-action. The time to get this triple balance is now, and the way is through

Grey-Rock Materials and Grey-Rock Engineering Methods, embracing N. S. C. Standards.

See Your Grey-Rock Jobber



UNITED STATES ASBESTOS DIVISION of Raybestos-Manhattan, Inc., MANHEIM, PA:



BALANCED BRAKSETS · BLOCKS

ESSENTIAL PRODUCTS FOR ESSENTIAL TRANSPORTATION



"PLUG-CHEK Guides New Mechanics"

... says THE N. D. MASELLI CORPORATION OF BLOOMFIELD, CONN.

"Plug-Chek"—Auto-Lite's famous and accurate gauge of spark plug effectiveness—gets one more boost from an enthusiastic user. The Maselli organization—modern earth movers of Bloomfield, Conn.—says:

"We believe that the Auto-Lite Company should be complimented for making "Plug-Chek" available. Using "Plug-Chek" has solved a difficult problem in operation by helping unskilled mechanics to determine effective plug operation. By means of the color of the spark plug insulator and the use of a data book as a guide, "Plug-Chek" helps them select the proper plug for the particular installation."

Find out for yourself how "Plug-Chek" can help you cut maintenance costs. We'll be glad to send you a complete "Plug-Chek" kit free of charge. Write to

THE ELECTRIC AUTO-LITE COMPANY

Merchandising Division

TOLEDO 1,

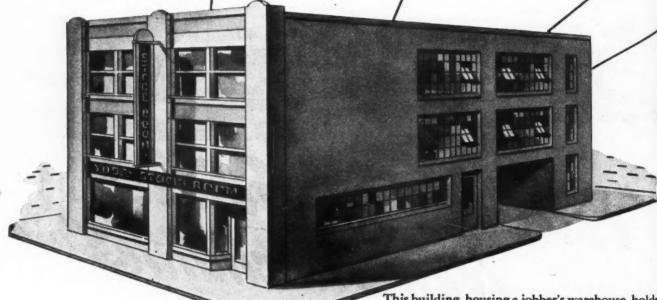
OHIO



AUTO-LITE SPARK PLUGS
IGNITION ENGINEERS BY IGNITION ENGINEERS

TUNE IN "EVERYTHING FOR THE BOYS" STARRING DICK HAYMES-EVERY TUESDAY NIGHT-NBC NETWORK



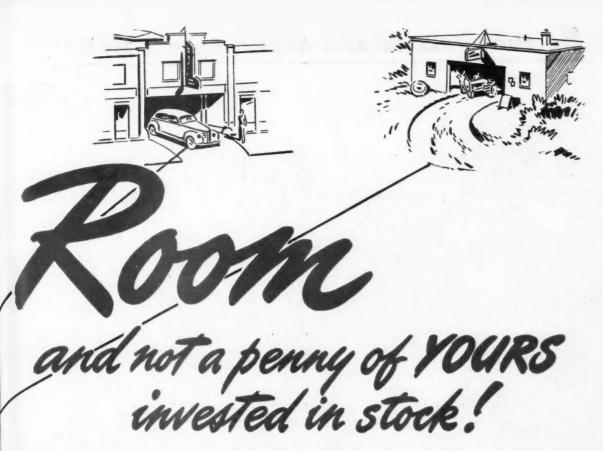


This building, housing a jobber's warehouse, holds a stock of service parts, equipment, tools and accessories worth many thousands of dollars . . . yet it is a department of *your* business, that you can rely on for complete service stock availability and machine shop. You can use it as an extension of your own shop. Your Jobber has grown up by filling a vital need, performing an essential service.

NSPA

PARTS . TOOLS . EQUIPMENT

ACCESSORIES • SUPPLIES



Have you ever stopped to consider "what it takes" to enable you to call your Automotive Jobber and obtain the service parts, tools, equipment and accessories you need for immediate use?

It takes an investment of many thousands of dollars in stock. It requires a completely equipped machine shop with skilled personnel. It demands constant alertness to latest developments in tools, equipment and technical knowledge.

Because he serves you and many similar outlets, it has been made possible for your Automotive Jobber to invest a fortune in parts, equipment and accessories to maintain this prompt, accurate service—and yet not a penny of your money is tied up in this business devoted to your service!

Working closely with you over the years, your Automotive Jobber understands the needs of your specialized type of maintenance service. He can be a definite aid in helping you adapt and improve your service to meet changing operating conditions, will be a dependable source of

parts, tools, accessories, equipment, machine shop service and technical information on the new types of equipment which postwar development may bring.

You can depend upon your JOBBER!

THE COMPLETE ASSOCIATION

Devoted to maintaining and improving the Quality Standards of Service Parts, Equipment and Accessories manufacture, distribution and installation in America's thirty million automotive vehicles.

NATIONAL STANDARD PARTS ASSOCIATION - 35th FLOOR WILLOUGHBY TOWER, CHICAGO 3, ILL.



/et

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of

by

So they turned the ocean into a well!



American ingenuity makes salt water <u>fresh</u> for G. I. Joe!

As our forces advance in the Pacific they carry with them one of the most important tools of war—a new compression-type still. With it, the engineers turn the ocean and stagnant pools into wells of pure, sparkling drinking water!

A big problem has always been to transport the large amounts of fuel needed to distill sufficient quantities of water for troops at the front. So the remarkable feature of these new portable "waterworks" lies in their fuel economy.

To help accomplish this saving,

they're now equipped with a new type supercharger, specifically designed for the job by Borg-Warner's B-W Supercharger Division. And they're delivering up to 175 pounds of pure water for every pound of gasoline they burn... compared to the old ratio of 37 pounds of water per pound of fuel!

Normally, this Borg-Warner division works to improve the performance of gasoline and diesel engines. Its success in cutting the cost of water purification is a perfect wartime example of Borg-Warner's quick adaptability to new problems of design and engineering.

Borg-Warner's basic principle, "design it better—make it better",

has long guided the production of many items of essential equipment now in daily use by almost every American. Now, Borg-Warner factories are producing more than 100 items for war.

Partners with the automotive industry from the start, Borg-Warner supplies these and other essential parts...

TRANSAISSIONS TRANSFER GEARS OVERDRIVES
SYNCHROWIZERS CLUTCHES CLUTCH SPRINGS
DIVERSAL JOINTS AND DRIVE SHAFTS
FLUID COUPLINGS

CARBURETORS RADIATORS
TAPERED WHEEL DISCS



BORG-WARNER

Peacetime makers of essential operating parts for the automotive, aviation, marine and farm implement industries, and of Norge home appliances... these units which form the Borg-Warner Corporation are today devoted exclusively to the needs of war: Borg & Beck • Borg-Warner international • Borg Warner service parts • B-W superchargers, inc. • Calumet strel • Detroit Gear Aircraft parts • Detroit vapor stove • Ingersoll steel & Disc • Long • Marbon • Marvel-schebler Carburetter • Mechanics Universal Joint • Morse Chain • Norge Machine Products • Pesco Products • Rockford Clutch • Spring Division • Warner Automotive Parts • Warner Gear



By Government authorization, heavy-duty Autocar Trucks are now in production for essential commercial hauling. Act at once! Your Autocar Branch will help you file your application.

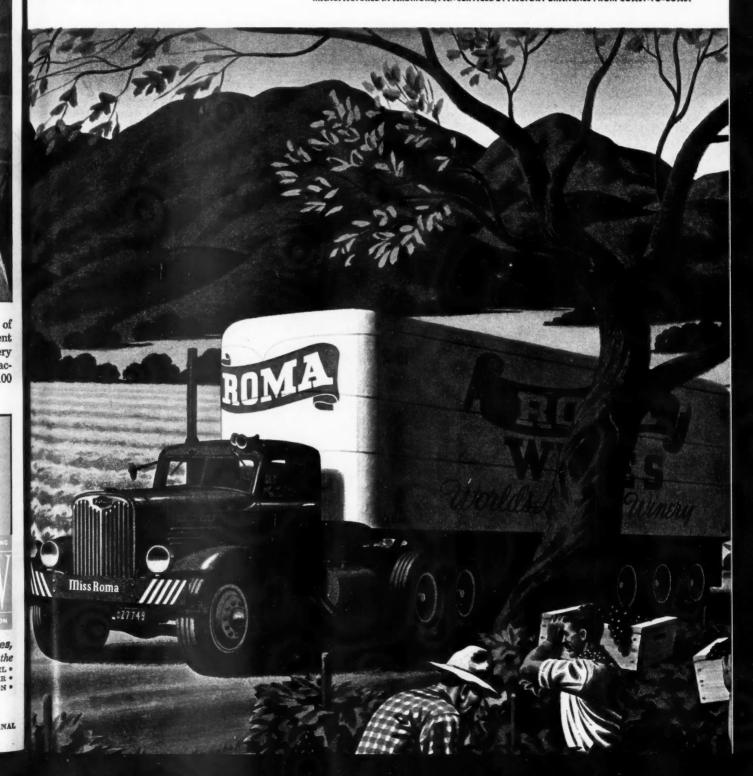
"MISS ROMA"... Pin-Up Girl!

"Miss Roma," pin-up girl of the Roma Wine Company fleet, is an Autocar, equipped with a semi-trailer and mounted with a van body rated at 39,000 pounds gross capacity. That's heavy! But as smooth as the wine she delivers from California wineries at Fresno, Lodi, and Healdsburg is her heavy-duty performance....The post-war trend is apparent: Bigger trucks for bigger payloads and even heavier-duty hauling. And in the vanguard of the nation's peace-time fleets will be swift, rugged Autocars, winning new laurels for precision-built dependability and low-cost-per-mile performance.



U.S.WAR BONDS TODAY'S HEAVY-DUTY JOB

AUTOCAR TRUCKS for Heavy Duty MANUFACTURED IN ARDMORE, PA. • SERVICED BY FACTORY BRANCHES FROM COAST-TO-COAST





FOR THE TOUGH JOBS OF PEACE, TOO!

Photograph Courtesy of Autocar Co

This prime mover of industry, made by Autocar Co., like its brothers now doing service on the battlefronts of the world, is also a "toughy". Peacetime heavy-duty jobs require the same stamina and dependability. That is why this truck, like the ones now operating at the front, are built on PARISH Pressed Steel frames.

The reason PARISH frames were selected is because they are made of special steels and alloys, and have a fatigue value 200% greater than steels commonly used. They are not affected by continuous side, vertical or end stresses, but "spring back" immediately to their original position holding all parts attached to them in true relation to each other.

That is the reason a PARISH frame costs less in the lifetime of a truck. It lasts longer, and stays on the road, earning, more days of its life.

For your wartime or peacetime requirements be sure to specify PARISH pressed steel heat-treated truck or trailer frames. The frames with the "spring back".



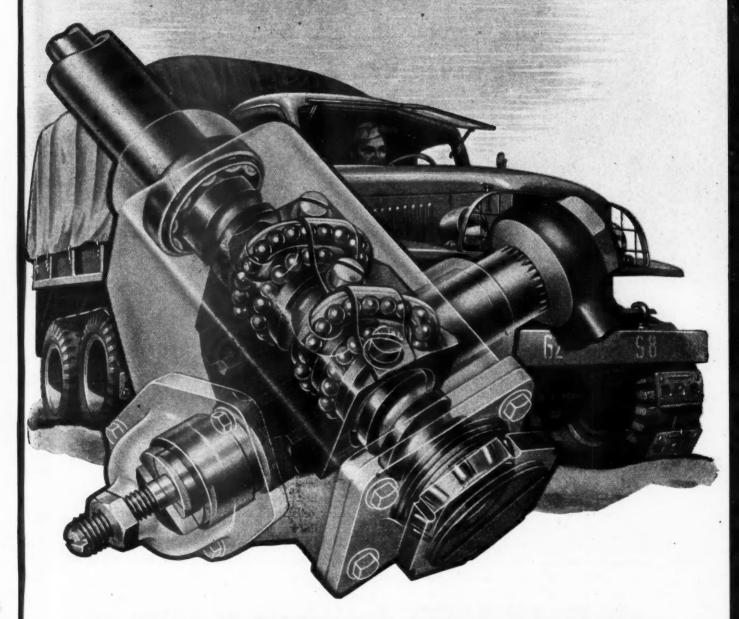
Our entire facilities have been turned over to the manufacture of heavy duty frames and other products necessary for the promotion of our National War Effort.

PRESSED STEEL HEAT-TREATED FRAMES FOR TRUCKS AND TRAILERS

PARISH PRESSED STEEL CO. Subsidiary of SPICER MFG. CORP.
READING, PA.

Western Representative: F. Somers Peterson, 57 California St., San Francisco, Cal.

TOUGH STEERING MADE EASY!



SAGINAW STEERING GEAR DIVISION
GENERAL MOTORS CORPORATION
SAGINAW, MICHIGAN

MANUFACTURER'S OF STEERING GEAR ASSEMBLIES, STEERING LINKAGE ASSEMBLIES, UNIVERSAL JOINTS AND PROPELLER SHAFTS,
DIESEL ENGINE AND AIRCRAFT PARTS



WE'VE NEVER HAD A DRIVER'S SEAT ...



We're getting some mighty friendly comments from fellows who pilot trucks, buses and planes equipped with *Foamex* seats.

These men have been sitting on Foamex for some time.

That's the big point about Foamex..You can sit on it for some time—a long, long time at a time—without having your circulation cut off.

You don't really sit on Foamex. You float—on

air—on millions of breathing, buoyant, air-andlatex cells that cradle your muscles instead of cramping them.

Foamex is on a big safety job right now, shielding men from battle concussion. So please wait a while. Foamex is worth waiting for.

P.S. The ideal covering for Foamex seats— VELON,* Firestone's wonder fabric—stainproof, practically wearproof!

ANOTHER CONTRIBUTION TO A BETTER WAY OF LIFE

Firestone LIBERT TO THE VOICE OF FIRESTONE NORDEN EVENINGS OVER AND

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For Safety's Sake-



always specify genuine

WAGNER LOCKHEED HYDRAULIC BRAKE PARTS and FLUID

Wagner Lockheed No. 21 Hydraulic Brake Fluid is an ALL-WEATHER, YEAR-ROUND brake fluid for ALL hydraulic brake systems. It retains its highly efficient qualities under all driving conditions . . . Completely and properly mixes with other approved brake fluids.

Wagner No. 21 is readily recognized by the familiar red, white, and blue design with No. 21 in the circle.

IF NEW PARTS ARE NEEDED to repair the hydraulic brakes on any car or truck-Wagner Lockheed Hydraulic Brake Parts are recommended for superior quality, perfect fit, proved performance, and long life.

There's a Wagner jobber near you who is prepared to take care of your requirements. If you don't know his name, write us today.

H44-13

AUTOMOTIVE PARTS DIVISION Wagner Electric Corporation

AUTOMOTIVE AND ELECTRICAL PRODUCTS

6470 PLYMOUTH AVE ST. LOUIS, 14, MO.

RNAL



"Quick, Joe-maybe it's a Diamond"

SURE—you might pick up a Diamond this way. Diamonds are made so well they sometimes last for years, often under the most amazing conditions. But how much better to keep your truck rolling by taking good care of the tires you have—no matter what their make. Today's tire shortage demands this—particularly in the case of synthetics which still require more care than natural rubber tires. Follow the rules of tire health—regular air pressure checkups, reduced speeds, and recaps when necessary. Then when you must buy new tires, you'll have every right to ask for brand new Diamonds—the favorite of truckers who buy for long mileage.



"HEAVY SERVICE" TRUCK TIRES . AKRON, OHIO . LOS ANGELES, CALIF.

Facts and Flashes

From the
ETHYL CORPORATION
Chrysler Building, N.Y.C.

FULL SUPPLIES OF ETHYL for civilian consumption must await decreased military demands. Even end of European war may not mean immediate availability of sufficient Ethyl gasoline to meet demands of the motoring public. There are still plenty of Japs to be taken care of, and the following items will give you some idea of the amount of Ethyl gasoline that has been going overseas:

A single mechanized division of the Army uses 18,000 gallons of high-quality gasoline an hour (and it's a long way across China).

To fill the tanks of just one B-29 Superfortress takes a whole tank-car full of high-octane gasoline-8000 gallons.

A gallon of 100 octane aviation gasoline contains three times as much Ethyl fluid as the average gallon of Ethyl gasoline sold at filling stations. The air forces alone use over 500,000,000 gallons of aviation fuel a month.

Large Posters are being furnished service station operators by a west coast oil company to discourage motorists from wasting time hunting for Ethyl when the only gasoline on hand is regular grade. The posters emphasize that doing without Ethyl is helping to win the war. To explain to the motoring public "Why your dealer's Ethyl pump may be dry," Ethyl has released special advertising through 257 newspapers. Reprints are available on request.



TIRE CHAINS for civilians will not be available for early procurement beyond the present quota, according to the recently formed Tire Chain Advisory Committee of the WPB. "War supplies," they say, "remain critically short."

A GASOLINE-BURNING HEATER weighing only 21 pounds is being used to dry soldiers' laundry, heat hospital tents, dry parachutes, de-ice planes and keep the ground warm while workmen dig tunnels.



A REPAIR SHOP CONTROL-TOWER from which jobs are assigned to various departments has been developed by a large car dealer. This system has aided the service salesman considerably in his contacts with customers by showing the amount of work given to a department for the day and has developed efficiency in the routing of cars from one department to another. The tower also presents an immediate check-up on the available service in any department.

Late Flash

THIRTY HORSEPOWER FOR EVERY MAN IN THE ARMED FORCES is represented in the 220,000 aircraft engines delivered by the automotive industry. This equals the combined generating capacity of 84 Boulder Dams and 56 Grand Coulee Dams. In World War II the men of a U. S. Infantry Division have 400,000 horsepower at their disposal. This is 12,400% increase over the 3200 horsepower of a World War I division.



A Bargain in Service Mileage



WAPA o Good Mare

TWO and even three times as many miles of actual road service as previously used plates has—in hundreds of cases on record here—been delivered by the Monmouth Metallix Clutch Plate.

The Metallix facing—a product of the world's leaders—dissipates heat rapidly, delivers full frictional efficiency when either hot or cold, and sets a new high record for durability. The Monmouth flexible hub and spring

steel face segments provide smooth easy take up of load, and dampen all roughness in engine operation.

The Monmouth Metallix Clutch Plate is a genuine bargain in cost per mile of service. Truck, bus and heavy vehicle operators will appreciate its service economy—their satisfaction and good will means more profit to you. Specification Bulletin on request. Sold by N.A.P.A. Jobbers from coast to coast.

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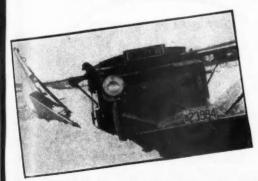
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EVEN during winter's worst snow-storms powerful OSHKOSH equipment keeps vital traffic moving without interruption.

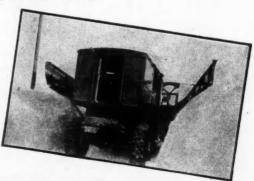
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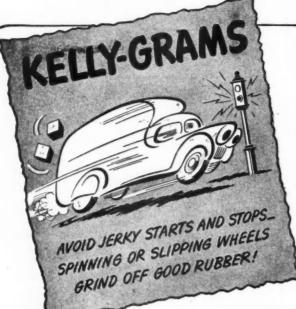


Coming or going
OSHKOSH equipment
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SERVICE STATIONS AT CONVENIENT POINTS THROUGHOUT THE U. S.

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"AFTER USING VARIOUS MAKES OF TIRES, WE FOUND THAT KELLYS GAVE US SUPERIOR SERVICE_NOW WE MAKE IT OUR POLICY TO PURCHASE ONLY KELLYS."



MAKE EM LAST_ WIDER BASE RIMS
IMPROVE TREAD MILEAGE AND TIRE LIFE. MANY
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WIDER BASE RIM INCREASES TIRE LIFE FROM 20 TO
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AND BETTER DISTRIBUTED. TREAD RESTS COMPACTLY
AGAINST ROAD. SCUFFING AND SLIPPAGE ARE
REDUCED...IF THERE'S AN OVERLOAD

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WIDER-SPACED BEADS GIVE GREATER STABILITY. THE INCREASED AIR CUSHION

LESSENS CARCASS STRAIN.

KELLY Upringfield TIRES

DEPEND ON THE KELLY DEALER FOR EXPERT REPAIRS, RECAPS, AND INSPECTION!

THE KELLY-SPRINGFIELD TIRE COMPANY, CUMBERLAND, MD.

MAREMONT has what it takes!

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The making of Maremont Springs is a precision operation which follows exacting detailed specifications and engineering drawings. Each spring is double checked for exact cutting length . . . precise leaf arch . . . size of spring eye and bushing . . . size and position of each rebound clip . . . size and position of center bolt . . . specifications for heat treating. Our Spring Engineering Department sees to it that all these specifications and others, are rigidly followed. Maremont Springs are built right for better performance and longer life.

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- 1 Laboratory tests that tell.
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MAREMONT Allow Steel 5 PRING 5

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For trucks, buses, tracters, shovely

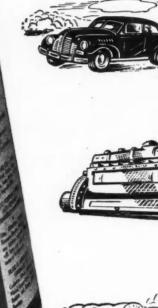




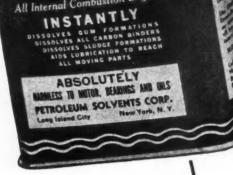














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LOOSITE cleans the engine and SILOO keeps it clean. Protective maintenance with these safe, swift-working sludge solvents insures complete lubrication - protects all vital working parts of the engine.

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Interesting Facts About FRICTION

Friction, both in its total amount and its coefficient, is practically independent of the surface areas in contact, so long as the total pressure remains the same.



Thus, in the illustration, the 10 lb. block has the same coefficient of friction (f) in a horizontal position as it does in a vertical position. The amount of surface areas in contact has little or no effect on the friction coefficients. When the pressure becomes abnormally high, however, fric-tion increases at a rapid rate until seizing occurs.



Velverouch is all metal - a Velvetouch is att metal — a combination of powdered metals, compressed, sintered and welded to a solid steel backing.

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Marmon-Herrington Airborne Tanks SPEARHEADED NORMANDY INVASION

FROM designing and building trucks, to the production of airborne tanks might seem a long distance for any manufacturer to travel. The design and production problems might seem to be dissimilar.

But not for Marmon-Herrington.

For Marmon-Herrington has always built unconventional types of vehicles—All-Wheel-Drive trucks, track-laying tractors and tanks, even before the war began.

So, early in the war, when military strategy an-

ticipated the need for a large number of light, highly maneuverable airborne tanks for invasion operations, it wasn't strange that Marmon-Herrington was asked to build them. Nor was it strange that they performed with great effectiveness when carried in giant gliders over, and landed behind enemy lines.

Our real business, however, is *trucks*—and we hope it won't be long until we can build all our customers need of them, for the many peace-time projects delayed by war.

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COMMERCIAL CAR JOURNAL

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WEARY WORLD

The first ten years of peace promise to be the most active period of road building the world has yet known. Shining new ribbons of concrete, globe circling in length, will replace old inadequate roads and open up new territories now remote and inaccessible

May these roads be the bonds of an enduring peace—symbols of a day of better understanding between nations!



DUTY HI-DUMPER A combination of 15 ton capacity (Model 102) Hoist and special Rock Body (Type 673). The St. Paul Heavy Duty Hi-Dumper withstands carehing withstands crushing

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On the job after Tunis fell...



SIGNAL CORPS PHOTO

When Civilian Supplies were Essential

Tunis fell May 7, 1943. Newspapers said: "Hysterically happy inhabitants by tens of thousands welcomed the allied armies. Heedless of danger, French and native populations literally danced with joy."

But joy doesn't last without food and other necessities. Prompt distribution of supplies to civilians was essential at Tunis to keep order and assure security. The photograph above shows an International Truck at work on this important job.

International Trucks are at work on fighting fronts and in liberated areas virtually everywhere.

There, too, former Harvester men are driving and servicing the trucks they once helped build. They drive with confidence and do service jobs with pride. They have reason. They had a share in making these sturdy Internationals.

International Trucks are rugged. Their stamina and dependability at war and at home explain why —in the 10 years before the war—more heavy-duty International Trucks were sold than any other make.

INTERNATIONAL HARVESTER COMPANY

180 North Michigan Avenue

Chicago 1, Illinois

INTERNATIONAL Trucks



New Trucks—Now! The government has authorized the manufacture of a limited quantity of trucks for essential civilian hauling. International is building

them in medium-duty and heavy-duty sizes. See your International Dealer or Branch now and get valuable help in making out your application. Don't delay!

COMMERCIAL CAR JOURNAL

Vol. LXVIII, No. 2 October, 1944

ODT Plans V-Day Action

The Highway Transport Department of the Office of Defense Transportation is formulating plans for relaxing wartime controls on truck operators which will reflect Allied fortunes in the war with Germany and Japan. The department's aim is to effect an orderly, intelligent relaxation of controls. It will strive to avoid a chaotic return to unrestricted truck operation. Division heads and section chiefs have been asked their views. Suggestions have been made to truck operator groups that they give some thought to the matter.

Current Thinking

In formulating V-day plans, the principle task is to determine the relative importance of the various conservation orders and regulations, and then to revoke the least important first. At the moment, conservative thinking envisions a plan for V-E day (when war ends in Europe), when certain controls would be removed, and another plan for, say, V-J day (when war ends with Japan), at which time the remaining controls would be revoked. There is a possibility that only one plan will be formulated, to take effect with the defeat of Germany, under which restrictions would be removed piecemeal but over a period which would take into consideration the size of production cutbacks by the military and the time it would take truck manufacturers and tire manufacturers to get back into large-scale civilian production.

50% Military Cutback

The WPB is busy with its own reconversion plans and these are reported in a separate article in this issue. It is certain that the cutbacks of automotive military production will reach at least 40 per cent. One



ODT Plans V-Day Action . . . 50% Military Cutback . . . Gasoline Plentiful . . . 105,000 Heavy Tires . . . 7500 Trucks

Down . . . ODT Gives Job to OPA . . . Loophole for Operators

. . . Issue Over Gas Appeals . . . Palace Revolution . . . Etc.

by GEORGE T. HOOK

reliable informant told this department that it would exceed anything that has been publicly announced so far. He kept nodding to suggested percentages until they exceeded 50 per cent and then the suggestor became embarrassed at his own impudent persistence and stopped prying. Even a cutback of 40 per cent will release a vast amount of materials, manpower and productive facilities and it is expected that such automotive orders as the limitation on parts and shop equipment and all types of trucks and trailers will be revoked. Practically all of the material conservation orders will be revoked. A few

covering strategic materials are expected to be liberalized.

Gasoline Plentiful

In Washington the opinion prevails that when the war in Europe ends "gasoline will be running out of our ears." One well-posted informant declared that right now we are in a better position with regard to gasoline than at any time since the war began. Many more tankers are in coast-wise service; building of tankers is currently at the rate of 28 per month; sinkings are negligible; pipeline, barge-line and rail tank-car deliveries are up (Next page, please.)



WASHINGTON RUNAROUND

(CONTINUED FROM PAGE 35)

105,000 Heavy Tires

The ODT has been allotted 105,000 size 8.25 and up tires per month for the months of October, November and December. This is an increase over the 102,000 allotted for September. The figure of 105,000 is subject to review and indications are that it will be revised upward. No predictions are being made as to the degree of improvement that will take place in civilian tire production once Germany is put out of the war. This because everything hinges on whether the war with Japan becomes a predominantly land or naval war. If it's a naval war then tires, too, may be "running out of our ears." But even if it's a land war, there should not be any longer anything resembling a tire crisis after the krauts sour on continuing the war.

7500 Trucks Down

Meanwhile the so-called heavy-duty tire crisis continues. In ODT circles the highest figure now quoted is 7500 trucks out of service for lack of tires. These figures are not considered accurate even by ODT. Many of the trucks, while without tires, are said to be laid up in shops for repairs. Statistically, such trucks don't count as casualties of the crisis. The fact that more trucks are not reported out of service still amazes ODT statisticians, economists and just plain guessers. They can attribute it only to the "resourcefulness" of motor truck

operators. And the term covers a multitude of virtues and "sins."

Army's '45 Truck Plan

After delaying the matter for months the military authorities finally put in their 1945 truck requirements. Until developments in Europe dictate a revision the military minds have put in a claim for trucks in 1945 at the same rate of production as for the last quarter of 1944, and that rate is high. These trucks wouldn't be any good without tires, so a corresponding claim has been made for tire production.

ODT Short on Trucks

Current truck production is between 10 and 15 per cent short of the program set up by WPB for ODT's civilian requirements. The third quarter program calls for 35,570 trucks, of which 26,289 are mediums, 6999 light-heavies and 2286 heavy-heavies. In the months of July and August 20,142 trucks were produced for ODT. September production was not expected to make up the third quarter balance. The official term for the difference between programmed and actual production is "slippage."

ODT Gives Job to OPA

Effective Oct. 15 truck operators will have to go to their local OPAWar Price & Ration Boards instead of to the ODT district offices if they want temporary gasoline rations. This transfer of part of its gasoline rationing functions will enable ODT to close up 30 offices, release between 1100 and 1200 employees and save over \$2,000,000. The ODT will retain control of the issuance of permanent rations and all outstanding certificates of war necessity will remain in effect. However, we understand the OPA boards will have authority to cut the permanent rations in the following circumstances: (1) when operations have been discontinued or reduced; (2) when a board has knowledge of the misuse of gas; (3) when an applicant indicates that his needs are less, and (4) when an operator calls for rations after the start of a quarter. It is expected that in particular cases local OPA boards will seek the advice of ODT field offices. Instructions originally devised did not provide for any appeal to ODT from the decisions of an OPA board. This department was informed that OPA took on the job with the proviso that ODT would not have power to over-rule the decisions of local boards. It was foreseen that every unfavorable decision would be appealed and involve both agencies in duplicated effort that might nullify the economies sought by the transfer.

Loophole for Operators

A loophole does exist for truck operators to bring to the attention of ODT any refusal on the part of a local OPA board to grant extra or temporary rations for a particular quarter. They can do this by filing a request for a permanent change in allotments. However, those who are familiar with the gasoline situation maintain that truck operators are not likely to have cause to complain of the decisions of OPA boards. Ample gasoline is expected to be available to provide for the legitimate needs of truck operators.

Issue Over Gas Appeals

This matter of appeal precipitated an issue in the higher ranks of ODT. Taking the position that ODT was relinquishing its responsibility in the final determination of all allotments of gasoline the War Advisory Committee of the National Council of Private Motor Truck Owners, Inc. lodged a protest with Guy A. Richardson, director of the ODT Highway Transport Department, and urged that ODT reserve the right to receive and act on appeals. Mr. Richardson apparently gave them no satisfaction because a similar appeal was next made to Colonel Johnson, director of ODT. The Colonel is reported to have said that ODT had no intention of relinquishing any of its responsibility. Then, wittingly or unwittingly, he crossed up his lieutenant, Mr. Richardson, by specifically requesting that any complaints or appeals from the decisions of local OPA boards by private motor truck owners be sent directly to his office in Washington. The Council has bulletined its membership to this effect and a report was current that Mr. Richardson had drawn the issue with Col. Johnson. Washington circles were curious to see how the Colonel would manage to keep his lieutenant and his word. The betting was oddson that Mr. Richardson would not resign. (TURN TO PAGE 204, PLEASE)



Some Rope for ODT to Commit Suicide

UNDER orders from the President by way of the Budget Director, war agencies are now formulating suicidal plans to become effective with the military victories now in sight. Some of the agencies may recommend complete self-liquidation dating with a victory in Europe. Others may recommend a partial liquidation at that time. Still others doubtless will remain in business on a reduced scale until Japan is whipped.

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The WPB expects at least a 50 per cent military cutback of automotive production when Germany falls. This will mean that manpower, plant facilities and materials will be available for civilian purposes in such quantities as to warrant the revocation of orders that have limited the production of automotive vehicles, parts and shop equipment. Indeed, Director Middlekamp of the Automotive Division of WPB, has indicated that he would recommend cancellation of the limitation orders.

If automotive production is cutback 50 or more percent it follows that a greater supply of tires will become available to civilians.

Publicly the Petroleum Administration for War has been guarded in its statements regarding the possible gasoline supply after Germany's defeat. But privately, those who should know some of the details of gasoline supply and consumption, declare that "gasoline will be running out of our ears." They mean, of course, that there should be a plentiful supply for civilian truck and car users.

If these premises are correct, the question arises: What need is there for the Highway Transport Department of the Office of Defense Transportation after Germany is defeated?

Or, in other words, what need is there for continuing the wartime conservation controls under which truck operators now function?

If the premises are correct, ODT should plan to wash out its Highway Transport Department in not more than 30 days after a qualified authority announces to the world that Germany as a military power ceases to exist and that warfare in Europe may be considered at an end. The 30 days represents the advance notice which any government agency must give its employees.

It may be argued within ODT that controls should be relaxed piecemeal; that sudden relaxation of all controls would create a chaotic condition.

What sort of chaos? Who, precisely, will be hurt if truck operators no longer need to keep or submit records, or operate restricted mileages, or apply to government for a truck or a trailer, or register freight?

Wouldn't reconversion of industry be speeded if consumer controls were lifted and the consumers were free to acquaint industry with their needs? Isn't a quick return to civilian production and maximum employment the primary objective?

The highway transport industry is made up of businesses that operate for profit. If gasoline becomes plentiful they will not proceed to waste it. If they order trucks and learn that they can't get deliveries for six months, they can be counted on to get along with the equipment they now possess.

There is no need for government bureaucracy to assume a benevolent attitude toward them. They managed to get along with restrictions. It would be folly to presume that they could not get along without them.

Government Operation

GOVERNMENT operation of the 100-odd Mid-West motor freight lines is proceeding with an absence of fireworks. The complicated set-up is working smoothly under the able management of ODT's Ellis Longenecker, a practical truck operator. A situation that was all turmoil several months ago, is now so placid as to give the mistaken impression that government operation of truck lines is, after all, not a very undesirable state of affairs. Below the surface, not all is quite so pretty or desirable.

It looked as if Santa Claus had made a pre-season visit to the Mid-West when it became known to operators that the government operator had been given a \$5,000,000 bank account on which to draw. But the beard disappeared when government representatives started searching the books for unusual expenditures and ordering salary slashes among executive personnel. A pair of horns came in sight when certain expenditures and the employment of certain persons was questioned. Cloven feet put in their appearance when it became known that while the government was prepared to advance money it was determined to get back every cent that it loaned and would insist on operating methods and economies to assure this end. A tail uncurled when it became evident that borrowing from the government fund was not any easier than arranging a private

To many of the operators government operations must now look like a devil in Christmas clothing.

While the principle of government operation remains as undesirable as it always was, the present experience should be productive of some good. The government should get a better insight into the plight of truck operators. Already this has been recognized by ODT which has initiated a move to effect rate changes which should provide more revenue. It remains to be seen how the OPA and the ICC react.

And operators should get a real insight into the undesirable aspects of government operation, many of which have yet to unfold.

OIL CONTAMINANTS

Lubricating oil in use in internal combustion engines becomes contaminated by a large variety of materials. The following is a list of the principal contaminants.

FROM THE ENGINE

Core Sand, Metal Filings, Rust Wear Particles, (Iron, Bearing Metals), Coolant Leakage (Water, Anti-Freeze)

FROM THE AIR

Dusts, Dirt, Sand, Clay, Coal Soot, Straw, Insects

FROM THE FUEL

Fuel Soot, Dilution (Asphaltenes, Resins, Oil Acids), Lead Salts, Combustion Products (Water, Mineral Acids)

FROM THE OIL

Carbon, Asphaltenes, Resins, Oil Acids

A used oil filter cartridge provides definite distress signals which should be heeded in order to avoid real trouble in the engine. In this article, excerpted from a paper presented at the S.A.E. National West Coast Transportation and Maintenance Meeting in Portland, Ore., a filtration expert summarizes the signals and tells what they mean.

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A good oil filter should have certain characteristics and the author gives eight that will serve as a guide.



Cecil Bentley

WE have found that correct diagnosis of the used filter cartridge can be of utmost importance to the careful operator, since used cartridges frequently

reflect unusual engine conditions—just like a bundle of dirty laundry reflects the living standards and habits of its owner.

Distress Signals

We have divided cartridge diagnosis into several simple groups which represent the most common conditions. We call this group "Distress Signals" because they reflect distressed conditions which require immediate attention if real trouble is to be averted.

COLD RUNNING ENGINE: A cold running engine normally causes severe sludging, in which case the filter cartridges are rapidly loaded and heavy sludge deposits are found throughout the engine.

Oil Filte Cartridge

Mushy, light weight cartridge with flabby top indicates carburetor out of adjustment; if soggy, heavy and malodorous, look for blowby. Other faults similarly detectable

by CECIL BENTLEY

Vice President in Charge of Sales, De Luxe Products Corp.

FAULTY ENGINE ADJUSTMENTS: In this group three conditions should be noted:

- 1. When the carburetor is out of adjustment the filter cartridge appears mushy, it is light in weight, and the top is loose and flabby.
- 2. When blowby is excessive, the filter cartridge is soggy and heavy. It has a bad odor and the top is not filled out. You will also note that the stain is hard to wipe off from your fingers.
 - 3. When the engine is running too

An oil filter cannot "extend" oil life. It has limitations and these are pointed out. The author frankly admits that filters are useless and uneconomical for operations where engine temperatures are always very low and where blowby is always exces-

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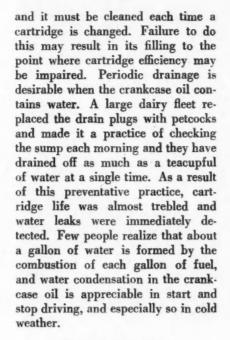
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The use of heavy-duty oils, which contain detergents and oxidation inhibitors, has changed filtering requirements. Certain filtering materials remove the additives.



Correct Operation

When operation is correct, the filter cartridge has a well rounded top, it is clean in external appearance, and it is firm. Under these conditions there is usually very little deposit, if any, in the sump.

A Good Oil Cleanser

The characteristics of a good oil cleanser are:

1. All parts of the cleanser including the cleansing medium should be inert to the oil. It should not adversely affect any quality of the oil. In this respect pure cotton has been found to be best. Absorbent materials such as the various filtering earths used in refining mineral oils cannot be used, as they also remove the oil additives necessary for detergency and/or oxidation stability. The filtering medium should not be soluble in oil under any condition. Likewise no "treating" chemicals or neutralizers should be added, as they may react with the oil to form harmful byproducts or to nullify the refiner's efforts. The problem of lubricating oil manufacture should be left to the

2. A good oil filter should be an integral part of every engine. However, if it must be attached as an auxiliary, it should be mounted on the engine itself to minimize the effects of vibration.

3. The filter and its necessary plumbing should be sturdily constructed to withstand high oil pressures, metal fatigue and vibration.

4. The filter should be equipped with a sump so that heavy particles and water can settle out and not unduly load the cleansing medium. The oil in the sump should not be agitated. (This is an important requirement for winter or cold weather operations; of equal importance is the fact that the sump should be cleaned each time the filter cartridge is changed.)

5. The filter should have adequate capacity for reasonable service life. Any recognized oil filter company can recommend the proper size filter for the various service requirements.

6. The filter should be able to keep oil insoluble material from accumulating in the oil and it should be able to remove even the smallest oil insoluble particles. This is important from the standpoint of maintaining oil stability.

7. The filtering medium should remain unaffected by service requirements giving fairly uniform cleansing action throughout its normal life. This means that the oil filter cartridge should neither compress nor collapse in service, and that it should remain unaffected by oil pressure surges. This presupposes a reasonably uniform density of the filtering medium throughout the loading pe-

8. Since the oil filter is connected to the engine oil pressure system, a provision must be made to avoid oil pressure drop. Properly metered inlet orifices are the most commonly used methods of preventing pressure loss. It is, likewise, of equal importance to control oil pressures within the filter; this is necessary to prevent pressure surges from "washing" the filter element. Water in a slowlymoving river is usually clear, but the same river under flood conditions invariably runs muddy.

Limitations of Filters

1. Filters cannot "extend" oil life. Oil life is a property of oil built into it by the oil refiner. It is dependent also on the service to which it is applied and to the care given to it. The oil filter can maintain the oil in a condition whereby maximum oil life in service can result. There is no pat answer to the question "when should oil be changed?" The engine operator working with his oil sup-

(TURN TO PAGE 148, PLEASE)

Diagnosis

cold, the filter cartridge has a glazed appearance. It frequently shows moisture and acids and is poorly filled. The filter sump is usually filled with gooey black sludge, under such conditions.

FILTER NEGLECT: Filter neglect usually takes two forms:

1. The filter cartridge is limited in size and must be changed when it is loaded regardless of the time interval or the mileage. An overloaded cartridge is easily recognized by its well-rounded top which also shows considerable surface sludge. After the cartridge becomes fully loaded, the oil begins to build up in contaminants and the succeeding cartridge has a "house-cleaning" job to do before normal operations can be re-

2. The filter sump is a catch basin

OCTOBER, 1944

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Tight Tire Situation May Last Rest of Year

Survey indicates no relief likely until Germany falls; Army reported taking 88 per cent of large tire output

by LEONARD WESTRATE

Detroit News Editor, Commercial Car Journal

NLESS Germany falls, there will be no break in the critical truck tire shortage during the last quarter of this year.

Since that statement is a pretty cold dash of water in the face of hopeful truck operators, it should be stated that it represents the opinion of officials and production men interviewed in a COMMERCIAL CAR JOURNAL survey covering the major tire builders in Akron and Detroit. All of them stress that their predictions are based on current conditions, but since they are dealing with imponderables and conditions beyond the control of the industry, they are not selling down the river chances for an improved civilian supply.

As a matter of fact, Col. Bradley Dewey in his last statement as rubber director, announced early in September that if the production picture continues to improve, all essential military and civilian truck tires will be produced in the fourth quarter. He pointed out that August production was 10 per cent above schedule and that output for the third quarter should be 12 per cent above the

July 1 forecast.

Counteracting this optimistic prospect, ODT Director Col. J. Monroe Johnson three days later gave out with a gloomy prediction that the current shortage of heavy truck tires would continue through the fourth quarter, and that the famine would spread to the smaller size truck tires. He stated further that replacement allocations by WPB for the last quarter of 1944 allow only 96,832 tires of size 8.25 and up per month, or slightly more than half the 189,599 estimated to be needed if essential motor services are to be maintained. Moreover, Colonel Johnson reported that replacements in the 7.50 and smaller sizes will be cut to 251,052 monthly, which is only 72.7 per cent of minimum requirements.

Why, then, this variation in official opinion from bright rose to deep indigo? Apparently, each side is approaching the problem from a different angle. The rubber director was looking at the production side, the ODT from the angle of military requirements. Men in the tire industry, looking at both sides, express the opinion that no definite, hard-and-fast statement can be made, but that at the moment any improvement for civilians is on slippery footing.

From the tire industry's viewpoint, here is the situation in a nutshell: The tire makers today are building approximately twice as many truck tires as they did in the peak year of 1941. Then they turned out approximately 8,200,000 casings. The cur-

(TURN TO PAGE 116, PLEASE)

TABLE 1-SUMMARY OF CERTIFIC ATES OUTSTANDING AND EQUIPMENT, MILEAGE AND MOTOR FUEL CERTIFIED AS OF JUNE 30, 1944 (COMPILED FROM DATA UNDERLYING THE CERTIFICATE OF WAR NECESSITY PROGRAM,

Vecational Group	Certificates Outstanding		Equipment				Annual Mileage Certified					
			Power Units		Trailers and Semitraliers				Average	Annual Motor Fuel Certified		Average
	No.	% Total	No.	% Total	No.	% Total	Total (000)	% Total	Per Power Unit	Gatton (000)	% Total	Miles Per Gallon
, Property Carrying Vehicles: Private: Agriculture (other than for-hire)	1,570,940	45.73	1,638,416	32.36	9,513	4.38	11,578,523	20.58	7.067	1.099.217	15.93	10.5
Government Agencies	40,494	1.18	233,421	4.61	8,202	3.77	1.976,156	3.51	8,466	273.456	3.96	7.2
Other Private: Extractive. Construction. Manufacturing. Wholesale Distribution. Consumer Distribution. Other Public Utilities. Bus., Prof. and Pers. Service. Institutional Agencies. Personal Transportation. Tank Trucks (all private uses). Not Elsewhere Classified.	316,117 82,220 145,275 428,547 13,632 103,408 10,222 151,348 52,727 1,874	1.16 9.20 2.39 4.23 12.48 .40 3.01 .30 4.42 1.53 .05	92,221 431,802 187,256 365,560 679,542 88,633 130,723 20,812 152,879 90,382 1,898 2,241,728	1.82 8.53 3.70 7.22 13.43 1.75 2.58 .41 3.02 1.79 .04	10.533 8.171 20.543 15.170 10.859 12,028 4,092 356 138 7,487 12 89,389	4.85 3.78 9.45 6.98 5.00 5.54 1.88 .16 .06 3.45 .01	1,322,827 3,567,584 2,488,966 4,489,114 5,918,895 786 597 1,020,350 141,779 920,455 1,380,074 4,637 22,020,268	2.35 8.34 4.43 7.95 10.52 1.40 1.81 .25 1.64 2.45 .01	14. 344 8. 262 13. 292 12. 225 8. 710 8. 863 7. 805 6. 812 6. 021 15. 269 2. 443 9. 828	181,613 385,974 322,433 521,248 650,597 76,002 108,769 14,855 80,462 211,171 402 2,553,526	2.63 6.59 4.67 7.55 9.43 1.10 1.58 .22 1.17 3.06 .01	7.3 9.2 7.7 8.6 9.1 10.3 9.4 9.5 11.4 6.5 11.5
For-Hire: Intercity Common Carriers. Local Common Carriers. All Contract Carriers Tank Trucks (all for-hire uses).	252.982	1.39 1.55 7.36 .16	154,967 117,310 342,890 14,850	3.06 2.32 6.77 .29	64.900 10,803 25,979 7,342	29.87 4.97 11.98 3.38	4,823,413 1,181,612 6,148,340 342,751	8.58 2.10 10.93 1.32	31,129 10,073 17,931 50,017	769,563 168,005 803,234 130,035	11.18 2.43 11.64 1.89	6.3 7.0 7.7 5.7
Total For-Hire	359,708	10.46	630.017	12.44	109,024	50.18	12.896,116	22.93	20,469	1,870,837	27.12	6.9
Total—Property Carrying Vehicles	3,316,482	96.54	4,743,582	93.70	216,128	99.47	48,471,063	86.17	10,218	5,797,038	84.02	8.4
8. Passenger Carriers and Rental Cars: Ambulances and Hearses. School Buses. Taxicabe. Rental Cars ¹ Local and Suburban Buses ² Intercity Buses ²	51,039 32,400	.78 1.49 .94 .05 .13	49,211 84,948 78,642 24,941 59,415 21,709	.97 1.69 1.55 .49 1.17	20 8 1 761 218 160	.01 * .35 .10	351,632 738,876 2,891,768 295,067 2,161,393 1,343,213	.63 1.31 5.14 .52 3.84 2.39	7,145 8,674 36,771 11,831 38,378 61,874	35,295 97,512 262,968 37,183 442,924 227,043	.51 1.41 3.81 .54 6.42 3.29	10.0 7.6 11.0 7.9 4.9* 5.9
Total		3.46	318.866	6.30	1,168	.53	7,779.949	13.83	24.399	1,102.925	15.98	7.1
Grand Total	3,435,487	100.00	5,062,448	100.00	217,296	100.00	56,251,012	100.00	11,111	6,899,981	100.00	8.2

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Less than .005 per cent.
 Includes approximately 13,000 rental trucks for which other information is not separable.
 Includes a relatively minor number of service trucks.

3 Miles per gallon is less than the amount shown because of the fact that mileage is certified to approximately 2,600 trolley coaches for which no fuel is included. This material is not separable except in the case of power units.

Truck & Bus Statistics Compiled by the ODT

Analysis of data submitted by truck operators in CWN's gives interesting and valuable picture of the industry



Chief, Inventory Statistics, Office of Defense Transportation



In connection with it Certificate of War Necessity program the Office of Defense Transportation has collected a substantial amount of

statistical material on the motor transport industry.

The summary contained herein is confined to a broad over-all picture of certificates outstanding and equipment, mileage and motor fuel certified to commercial motor vehicle operators as of June 30, 1944. A statement will be released at a later date showing, among other things,

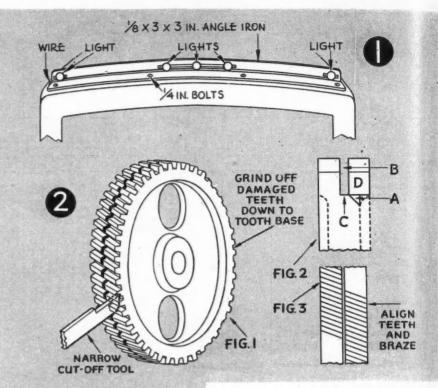
equipment by capacity and year model, together with a more detailed discussion of vocational uses.

As of June 30, 1944, there were

outstanding 3,435,487 certificates covering 5,062,448 power units, which units were authorized to (TURN TO PAGE 210, PLEASE)

It takes mechanical skill and ingenuity to keep trucks rolling these days. Here 10 fleet mechanics who have distinguished themselves with ideas that paid off:

- 1. Clearance Lights Guard by L. E. States
- 2. Cam Gear Repair by A. C. Miller
- 3. Home Made Grille by F. W. Green
- 4. Clutch Bearing Salvage by A. M. Lekander
- 5. Soft Brake Pedal by M. R. Shuck
- 6. Bearing Cup Removal by Preston R. Caleman
- 7. Engine Accessibility by Tom Bowdish
- 8. Timing Gear Replacement Tool by Joe Simonaro
- 9. Starter Belt Accessibility by J. Fischer
- 10. Headlight Ground Repair by Budd Shaulis



BIN. ZERK FITTING 1/8 X 4 IN. PIPE **CUT AWAY** 8 IN. COUPLING HERE DRILL HUB BIN. HOLE BRAZE GREASE WILL COME OUT HERE : BEARINGoff 3/8×8×8IN. BOARD

1. Clearance Lights Guard by L. E. States Scott Bros. Inc., Philadelphia, Pa.

One of the periodic maintenance jobs that we had in the past was repairing and replacing clearance lights and wiring torn away by the lower branches of trees in the suburban areas we serve. These jobs have been completely eliminated by the guard shown.

The guards are made of $3x3x\frac{1}{8}$ -in. angle iron cut to the width of the body. They were bent to conform to the curve of the top of the body and fastened to the top with $\frac{1}{4}$ -in. bolts. The lights are mounted on the angle iron, which prevents the branches of the trees from snagging them on the wiring.

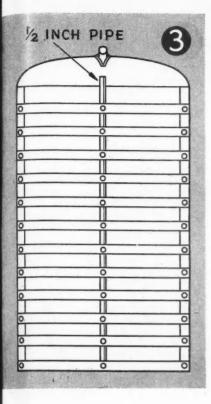
..

2. Cam Gear Repair
by A. C. Miller
Municipal Garage, Lakeland, Fla.

Recently a camshaft gear in a 5 h.p. gas engine stripped about one-third of its teeth. Unable to get a replacement we devised the following emergency repair.

First, we ground off the broken teeth flush to the tooth base line. Then the gear was mounted in a lathe and undercut, as shown at A, Fig. 2.

Next, using a narrow cut-off tool,





Commercial Car Journal will pay \$5.00 for acceptable shop hints and \$5.00 for unusual parts salvage tips.

Send in as many ideas as you have to the editor. Don't underestimate your ideas. Let the editor be the judge. A photograph or a rough sketch and simple explanation in your own words are enough. CCJ will polish them up for publication. Use this opportunity to earn extra money to buy more War Bonds to "Back the Attack."

* SHOP & SALVAGE HINTS

a slot was cut in the center of the face of the gear, as shown at Fig. 1 and at B, Fig. 2. When the slot reached point C, the undercut half of the gear, D, fell off. In appearance, it resembled a flywheel gear.

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We took gear D and pressed it on the shoulder at C, the bottom of the slot, first turning it a half revolution so that the section without teeth was matched up with the section having sound teeth, as shown in Fig. 3.

The job was completed by brazing, which was done at A, Fig. 2.

This repair reduces the length of the teeth about one-half but, as the gear only operates valves and no great pressure is encountered in service, it works satisfactorily.

3. Home Made Grille

by F. W. Green
Shop Foreman, The Cook & Brown
Lime Co., Oshkosh, Wis.

The grille on one of our 1938 Chevrolet pick-ups was wrecked recently. I tried to replace it but, of course, grilles are just about impos-

sible to get, so I figured out a way to make one. The sketch shows what it looks like.

I took a piece of ½-in. pipe and 12 pieces of one-in. strap iron 22¾ in. in length. I spaced the straps evenly, and fastened them at the centers to the pipe with 3/16 x ½ in. stove bolts. Then I bolted the straps to the radiator shell.

This wasn't an expensive job and didn't take long to do, but it's surprising how well it looks. The same idea can be applied to any truck having the cross-bar type of grille.

4. Clutch Bearing Salvage

by A. M. Lekander Garage Foreman, Ebling Creamery Co. Detroit, Mich.

Always being conservation minded, I have often wondered why something couldn't be done to reuse Ford clutch release bearings that were replaced because they rattled and could not be regreased. I had three or four old bearings cut open, then figured out the following method of

regreasing and reusing these parts.

We soak them in a degreasing solution, flush thoroughly in gasoline, dry and regrease with a fixture which we made up especially for this purpose. The fixture and our method of using it is shown herewith.

It will be noted from the sketches that the fixture consists of an ½-in. zerk fitting, ½-in. coupling, ½-x4-in. pipe and an old clutch release bearing hub. It was made up as follows: Cut away one end of pipe, as shown. Assemble fitting and coupling. Drill ½-in. grease hole at top of hub shoulder, where bearing rests, and blow out cuttings. Insert pipe into hub with cut-away end facing grease hole. Braze inside and end.

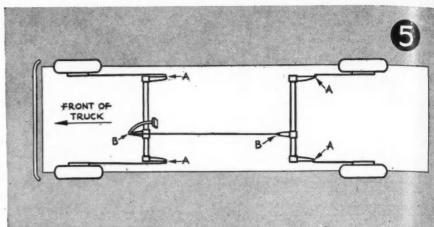
To use, put the bearing on the hub with the free face toward a board (a piece of ¾x8x8 soft pine). Insert board and fixture into a vise, tighten and apply grease until it squeezes out between bearing and board. That's all there is to it.

We have been salvaging clutch (TURN TO NEXT PAGE, PLEASE)



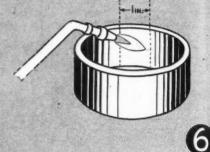
Commercial Car Journal will pay \$5.00 for acceptable shop hists and \$5.00 for unusual parts salvage tips. Send in

as many ideas as you have to the editor. Don't underestimate your ideas. Let the editor be the judge. A photograph or a rough sketch and simple explanation in your own words are encugh. CCJ will polish them up for publication. Use this opportunity to earn extra money to buy more War Bonds to "Back the Attack."



SHOP & SALVAGE HINTS

(CONTINUED FROM PAGE 43)



bearings for some time now, and they all work fine. Some bearings have been regreased three times already and have been in service over 100,000 miles, whereas, previously they were discarded at about 25,000 to 35,000 miles.

By using an adapter, we also use this fixture to grease Dodge and other bearings. The results are good.

5. Soft Brake Pedal

by M. R. Shuck Garage Foreman, Railway Express Agency, Sioux City, Iowa

Here's a hint for maintenance men who may have some of the older Internationals in their fleets, and who have hard pedal trouble after relining brakes—we used to, no matter how carefully all adjustments were made; sometimes they were so hard that it was next to impossible for the average man to stop the truck.

Pick up from your local salvage yard, two levers normally used at the braking end of the linkage, as shown at A in the diagram. Install these in place of levers B. They are an inch longer and produce a fine soft pedal. Only ordinarily pressure is required to stop the truck smoothly and quickly.

6. Bearing Cup Removal

by Preston R. Coleman Rainey Wood Coke Co., Conshohocken, Pa.

Worn out wheel bearing cups on large trucks are pretty hard to punch or press out of the hubs. We use a torch and get about one inch of the inside of the cup red hot. Then we cool it off quickly with cold water. Expansion and contraction do the trick. The cups almost fall out.

Usually, the hub remains hot and expanded enough to aid installing new cups.

7. Engine Accessibility

by Tom Bowdish State of Washington, Dept. of Highways Tacoma, Wash.

We have several cab-over trucks of a popular make in which the engine is about the most ineccessible thing that I ever saw. An inspection hole, about 6 in. square, is provided in the floor board for checking oil. However, if there's any work to be done, it is necessary to remove 18 screws from the floor board, even to change a spark plug.

To simplify matters and save precious time, we cut the floor board on one side of the center cover. On the cut side, we welded pieces of strap iron, shaped in a reverse Z. They slip under the center cover to hold the cut section in place, and provide hinge-like action when the floor board is lifted for removal. The other side is fastened in place by metal buttons, as shown in the drawing.

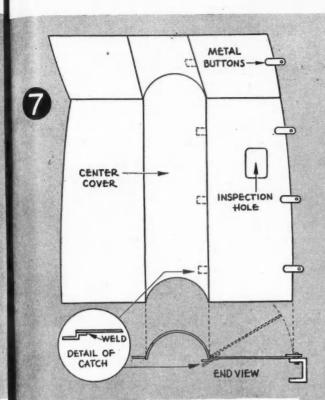
Now it only takes a few moments to lift the floor board.

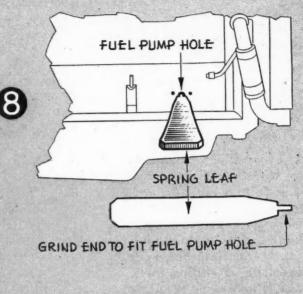
8. Timing Gear Replacement

by Joe Simonaro North Tenth Auto Repair San Jose, Calif. di

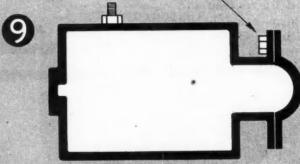
Here's a shop hint that will save you at least one hour, maybe two, the next time you install a timing gear in a Chevrolet. It's done without moving the camshaft and it does not disturb the plug on the end of the camshafts. Here goes:

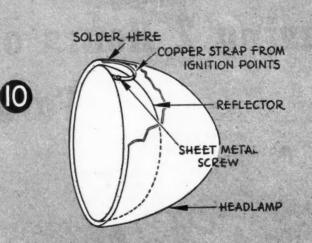
Take an old spring leaf and grind one end small enough so that it will fit the hole where the fuel pump goes. It has to be ground on a radius small enough so that it will go around the small end of the cam. Let it shoulder squarely behind the cam that drives the fuel pump. It should be just long enough to clear the side of the frame.





BY BRAZING 7/6 IN. NUT





Now, as you are driving the gear on, have your helper put the tool on the cam to hold it forward—to keep the camshaft from hitting the plug. That's all there is to it.

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9. Starter Bolt Accessibility

by J. Fischer East End Dairies, Inc., Indianapolis, Ind.

On a good many trucks (passenger cars also) the top starter mounting bolt is very hard to get at. This is due to the short starter end casting used, and that the steering column, wires, and accessories are in the way. Adding to this, the mounting cap screws have a rather large head, which makes it impossible to use a socket wrench.

We have solved this one by sawing the head off the top screw and replacing it with a 7-/16-in. SAE nut. The nut is brazed on the threaded end of the cap screw. In this way, it can be installed and removed with any socket or universal wrench saving time and temper.

10. Headlight Ground Repair

by Budd Shaulis
Continental Baking Co., Norristown, Pa.
Ford headlight reflectors have

spring steel ground contacts which eventually become rusted causing a poor ground connection.

We have overcome this by taking the copper strip on Ford ignition points (1937 and later), cutting it off close to the fibre and using it for a ground connection. The end with the hole is fastened to the reflector with a small sheet metal screw, and the other is soldered to the edge of the headlamp back of the reflector.

This repair not only gives a flexible connection but one that will not rust and makes replacement of reflectors an easier job.

BEATING FACTORY TIME

As every fleet mechanic knows, camshaft gear replacement is quite a job. According to the factory, it requires 6.4 hours. There are some mechanics who can do the job in slightly less time but, with the shortage of skilled men, it often is necessary to allow more.

By using the following method to replace the camshaft gear, the job is greatly simplified and the necessity of removing the camshaft from the engine is eliminated.

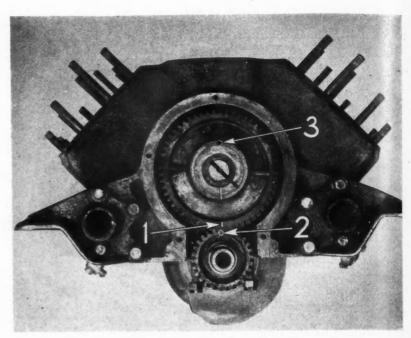
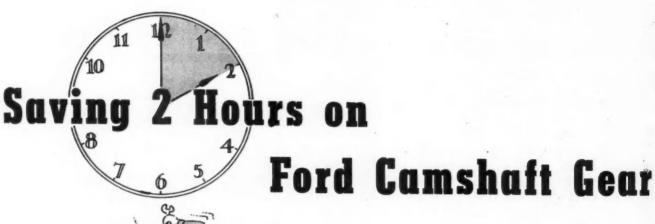


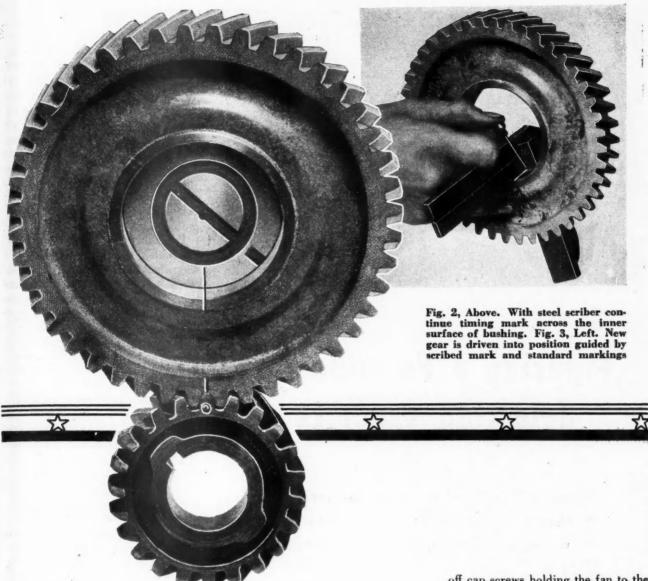
Fig. 1. First step is alignment of timing marks, shown at "1" and "2", above. Next step is to drill a 5/16-in. hole at point "3" in the steel bushing





Unique method employs drill and drift to remove worn gear. New gear then is driven into position. Necessity for grille and camshaft removal thus is eliminated HEN Ford camshaft gears require replacement, the usual procedure is to remove the camshaft assembly, pull the old gear and press the new one on the shaft. Before removing the camshaft assembly, it is necessary, of course, to dismount the radiator and grille.

As every fleet mechanic knows, camshaft gear replacement is quite a job. According to the factory, it requires 6.4 hours. There are some mechanics who can do the job in



Replacement

slightly less time but, with the shortage of skilled men, it often is necessary to allow more.

To prevent tying up a truck or tractor for practically a whole day, many fleet operators schedule the job for the night crew. More often, the entire camshaft assembly is replaced and the old gear is removed and replaced when convenient.

By using the following method to replace the camshaft gear, the job is greatly simplified and the necessity of removing the camshaft from the engine is eliminated. It is estimated that two hours time will be saved.

The Procedure

Drain the cooling system and remove the generator and fan belt and fan. On engines that have the fan mounted on the generator pulley, remove the generator and fan as a unit. On models with the fan mounted on the crankshaft pulley it is not necessary to remove the generator. Take

off cap screws holding the fan to the crankshaft pulley and remove the fan.

Next, remove upper and lower radiator hoses, and remove the radiator core assembly. It is not necessary to remove the radiator grille as there is sufficient room in which to work between the engine and grille when the radiator core is removed.

Now, remove the ignition coil and distributor assembly from the timing gear case. Take off the spark plug wire conduits and caps. Unscrew the crank dog and remove the crankshaft pulley from the crankshaft.

Before doing any further work the front of the engine should be thoroughly washed down to prevent any dirt from falling into the crankcase when the timing gear case cover is removed. Next take out the cap screws holding the timing gear case cover

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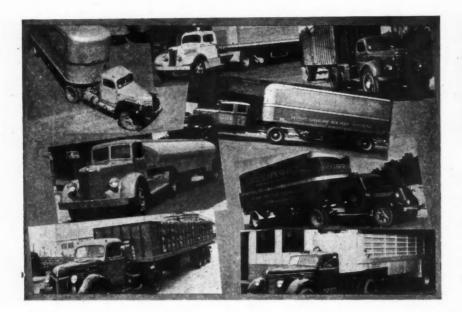
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Figuring a Formula for Selecting Tractors

Allowing 1 cu. in. of piston displacement in the engine of the power unit for each 100 lb. g.v.w. gives amazingly accurate result

by K. W. BIRKIN

Seperintendent, Automotive Department, Sinclair Refining Co.

THE FACTS BACK OF THE FIGURING

"During recent months (says the author) I have made some studies concerning possible post-war adjustments of our fleet. The idea in mind is to possibly replace present equipment with larger units. Because of various restrictions as to axle weight and gross vehicle weight imposed in various states, the largest practical unit usually proves to be a

tractor-semi-trailer combination. Preliminary calculations connected with determining the size of the tractor have always been tiresome and tedious. I felt that any general method of calculation, based on characteristic relations between power, gross vehicle weight and tractor weight would permit the use of a simpler method." (Here is the result.)



K. W. Birkin

THE preliminary calculation connected with determination and selection of a tractor for a tractor semi trailer unit has always been a tiresome and

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tedious job. For the most part it involved the arbitrary selection of some specific make and model tractor; thence working backward to determine the gross vehicle weight.

I felt that any general method of calculation, even though it may be a somewhat elastic yardstick, would eliminate a lot of the preliminary and troublesome computations based on the trial and error method. Any alternative based on characteristic relations between power, gross vehicle weight and tractor weight that will permit the use of a simpler method seems of interest and value.

As a basis for such calculations I have accepted the premise of allowing one cu. in. of piston displacement in the engine of the power unit for each 100 lb. of gross vehicle weight. The results attained through the acceptance and use of this very simple formula are amazingly accurate in the majority of cases. In a later paragraph it will be pointed out that there is a definite justification for the acceptance of the ratio of one cu. in. per 100 lb.

Admittedly, this ratio cannot be applied indiscriminately and it must be tempered to fit special cases. Obviously, consideration must be given to the character of the country, road conditions, traffic and so on. But over a long period the rule has proved to be very sound.

During recent months, I have made some studies concerning possible postwar adjustments of our fleet. The idea in mind is to possibly replace present equipment with larger units. Because of various restrictions as to axle weight and gross vehicle weight imposed in different states, the largest practical unit usually proves to be a tractor-semi trailer combination. In my studies I have found several ratios between weights and power that are of specific value.

It was found that the average truck engine develops approximately nine (TURN TO PAGE 157, PLEASE)

BUBBLE TROUBLE-SHOOTING

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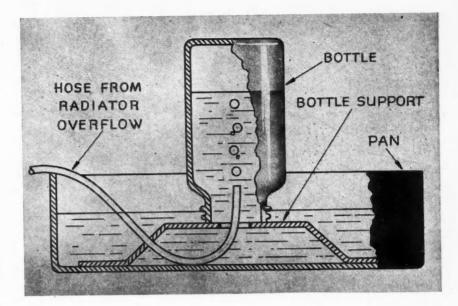
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During extensive investigations of radiator and cooling system designs, the Mack laboratories found it helpful to have a method for distinguishing between radiator overflow gas discharge which resulted from gasket or cylinder head blowby (a tendency that increases when detonation occurs), as contrasted with that from atmospheric leaks. This should prove equally helpful to the maintenance mechanic or troubleshooter, for he can save time by not looking for trouble in the wrong place. It was merely necessary to rig up an arrangement such as is sketched at right. The gas trapped in the bottle reveals the nature of the leak.

YENERALLY speaking, modern radiator design has kept pace with the improvement of today's internal combustion engines. Lighter engines of higher specific output, operating at higher compression and combustion pressures are, of course, much more efficient but they require more careful maintenance as well as better fuels and lubricants. Similarly, altho radiators have not materially increased in size, they do have to dissipate more heat and handle more gallons of water per minute. To be more efficient, the individual water passages must be smaller. This means that the use of clean, rust inhibited coolants is essential and that the periodic flushings are more important.

The materially higher peak pressures which occur in the modern engine, particularly when detonation occurs increases the tendency for a little gas to seep or leak past the cylinder head gasket each time a cylinder



Determining Causes of Radiator Overflow

Leaks past the cylinder gasket aggravate contamination. Air in water displaces it, reduces heat transfer, increases expansion

hy W. F. AUG
Assistant Director of Research, Mack Mfg. Corp

inder fires. Only the correct gasket, clamped between truly flat heads, by cylinder head nuts carefully tightened to the recommended tension in the prescribed order, can control such seepage. The leakage which does occur into the cooling water jacket space tends to take small amounts of lube oil and partially cracked fuel along with it, thereby aggravating

the cooling system sludges and deposits. Relatively thin deposits in the narrow radiator water passages markedly decrease the rate of heat transfer and increase the pressure drop.

It is not generally appreciated that the rapidly circulating water can hold a considerable amount of air or com-

(TURN TO PAGE 136, PLEASE)



GRIPE DEPARTMENT

For Mechanics, Foremen, Superintendents, Supervisors—in fact all connected with the maintenance and operation of fleets, who want designers to give more thought to making post-war trucks easier to maintain and repair and less costly to run

COMMERCIAL CAR JOURNAL WILL PAY

^{\$}10

FOR EVERY GRIPE PUBLISHED

AND each month one of the Gripes will receive an extra award of a

\$25

WAR BOND

READ . . . the letters on this page and you'll get a clear idea of what it's all about . . .

THEN . . . pull out a sheet of paper and, for gripe's sake, gripe and get paid for doing it!

A Gang of Gripes



\$10 AND \$25 BOND

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THE GRIPE DEPARTMENT, DEAR SIRS:

I have read the Gripes in the issues of "The Journal" and have a few of my own.

Over 20 years ago I studied automotive designing under the tutelage of a very able automotive consulting engineer: Mr. Ethelbert Favary. One point in engine design he particularly stressed, was to have the entire cooling system drain completely from one outlet. Apparently many designers were never given this tip, and many costly repairs have resulted because operators did not know there was an extra drain cock for the cylinder block base and on some models, still another on the air compressor head. In our shop, we are overcoming this condition on a well known heavy truck by installing a 3/8 in. copper line from the cylinder block drain cock hole to the bottom of the water pump inlet elbow. We found that in practically all cases when the original cock was removed, there was so much rust and sediment accumulated that the water could not drain until a wire was forced through. The installation of the copper tube will allow drainage and prevent this stoppage due to sediment, as there is definitely good circulation through it.

There is also a lot of space-crowding, multi-levered and bell-cranked gingerbread on some cab-over-engine models that could be eliminated on hoist and power takeoff controls by using the push-pull type cables. Air brake application valves are often located in heart-breaking places requiring 6 hr. or more of cramped cussing labor to remove and replace; whereas on some of our older models it could be done in 1 hr.

The beautiful streamlining of truck cabs presents a sweet headache to the wood worker who has to rebuild them after they have rotted or have been damaged by fire or accident. On some models a single post may have as many as eight or nine different



"The Gripe Department" invites fleet mechanics and all others connected with fleet maintenance and fleet operation to send in their gripes. For every griping letter published in this department, COMMERCIAL CAR JOURNAL will pay \$10. In addition, the best letter each month will receive a \$25 War Bond. The choice of letters for publication and for the War Bond will be made by the Editors of COMMERCIAL CAR JOURNAL. Their disposition of letters will be final. Choice will he determined by the content of the letters and not by style of writing or appearance.

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Here is a chance for every fleetman to tell the designers of post-war trucks what is wrong with trucks as they have been built and how post-war trucks should be designed to cut down maintenance time and maintenance costs.

Here is every fleetman's chance to get his ideas over to all of the big shots in the truck industry; presidents, sales managers, engineers and servicemen.

Here is an opportunity for fleetmen to influence post-war truck design along lines that will make their jobs easier and more pleasant.

Address your letter to THE GRIPE DEPARTMENT, COMMERCIAL CAR JOURNAL, PHILADELPHIA 39, PA.



angles. For what? The danged thing is still a truck.

There are certain radius-rod and spring hanger pins on several models that rust and freeze in place, and require a tremendous amount of power to remove. Since some of these pins are not easily accessible for the application of such driving force due to obstruction by other parts, it is necessary to remove the rear axle shaft, wheel, brake shoes, and carriers before a drift bar and sledge hammer can be applied. If the designers would change the size of the tapped grease fitting hole from 1/8 in. pipe to 1/4 in. pipe thread on heavy pins, it would help the repairmen considerably. In some cases where pins cannot be driven through from either side, it is possible to screw a threaded rod into the grease fitting hole and use a slide hammer or a recently patented hollow center hydraulic jack to pull them. During the pulling operations, the 1/8 in. thread often strips before the pins can be budged. The hollow center jack does the radius rod pin job from the inside without removing wheels, brakes, etc.

Why not make cylinder block expansion or cup plugs of stainless steel after the war? The failure of these 5-cent items due to rusting, often means several hours' lost time for a truck, and considerable work for a mechanic when failure occurs in an inaccessible place, and there are plenty of such places.

Do the designers of certain "cab over" trucks have the fond expectation that the valve seats in number six cylinder will never need reconditioning? They use hardened inserts which require the use of a Hall seat grinder or like machine, but they placed a cap support member in such a position that it makes the use of a machine impossible.

More goat getters: anaemic emergency brake pawl and reverse latch rods on some makes. They break too often. The adjustable V belt pulleys that just have a binder bolt and no positive lock, could be improved upon. There are a lot of other things that give us a pain, including the big, husky-looking tin bars on certain front ends. What a sorry sight they are after the slightest bump. For what they cost, a substantial radiator guard could be supplied. Oops! Maybe I'd better shut up; the guys who sell replacements have to live

CLINTON STUTTER, Foreman of Mechanics (large metropolitan fleet).

too.

Freeze Plugs & Brake Lines

THE GRIPE DEPARTMENT,

DEAR SIRS:

Not being a mechanic but rather a trouble shooter for the garage, I hear plenty of gripes from our mechanics, especially when I ask just why a certain job has taken so much time.

Every fall when it is time to prepare for winter weather, here is one gripe that is more out spoken than any other — Freeze Plugs. Here it

"Why in the hell do they put a freeze plug in the back of a motor so it is nearly impossible to get to it?"

On all our trucks it takes two hours to get to the back freeze plug when it should be a 5-min. job. It seems to me that this could be remedied on all motors.

Another thing is brake fluid lines. They could be placed in an easier position so their inspectors would not take up so much time.

I am not writing this gripe solely to have a chance at one of the prizes but it would be worth plenty of dollars to all fleet owners if these two gripes could be lost.

FRED SMITH, Sales Mgr., Cameron & Barr Baking Co., Chattanooga, Tenn.

Master Brake Cylinder





THE GRIPE DEPARTMENT, DEAR SIRS:

In reference to your "Gripe Department" I have a first class "gripe"—I would like to submit and also a way in which to remedy future "gripes" of the same.

The master brake cylinder in a certain cab-over-engine truck that our company uses is a first class "gripe." This cylinder is located on the subframe with the bolts holding same between the frame and a splash apronunder the fender, thus making an almost impossible job of repairing this cylinder. One has to remove and

(TURN TO NEXT PAGE, PLEASE)



GRIPE DEPARTMENT

(CONTINUED FROM PAGE 51)

replace this unit entirely by feel instead of seeing what he is doing. I believe a removable door in the fender splash apron, such as a battery floor board cover would remedy and greatly simplify this job and make it a real time saver. We have a fleet of 39 trucks.

K. C. EDGAR, Fleet Supt., Columbus Coca-Cola Bottling Co., Columbus, Ga.

A Body Builder's Plea

THE GRIPE DEPARTMENT, DEAR SIRS:

With great interest I have read the letters in your Gripe section of the COMMERCIAL CAR JOURNAL and feel there is an "open season" on truck engineers and builders. I am a body builder and for 10 years have had a "silent gripe" for truck designers, engineers and builders.

For the last 10 years each company was building trucks according to their own fancy, never thinking of the body builder who was supposed to design a body for one truck and then take off the body and put it on a truck of another make.

To begin with the frame-every truck had a frame of a different width and the sills would not fit. The cab to axle dimension never was the same on any two trucks and the wheel housings had to be different. The length of the truck frame was hardly the same on any two trucks of another make and this would require different lengths of bodies. eprings used to have various sizes of "free" arches and this affected the wheel housings. The tires would be too high above the frame to afford proper loading height and either the sills would be too high to suit the buyer or too low so the tires would scrape.

All the above trouble was encountered when a customer would order a body and intended to buy a certain make truck. We built the body to fit this truck and then the customer would change his mind and buy some other truck. Or a customer would order a semi-trailer with the largest loading capacity and could not make up his mind to get a tractor of suitable length to stay within the lawful overall length; not all trucks have the same cab to bumper dimensions. The customers want large bodies to suit their business but they cannot be made to fit any truck.

It is not the body builders idea to have all trucks looking alike. That would be silly. But we think that basic dimensions such as frame width, frame height, cab to axle dimensions, spring sizes and length behind the cab could be more universal and the customer would be in a position to

put a body on any make truck and

we hope that the post war truck de-

signers and engineers will help us a

HERMAN GRUENWEDL, Herman Body Co., St. Louis, Mo.

Oil Filter Inconvenience



\$10

THE GRIPE DEPARTMENT, DEAR SIRS:

May I offer one of my pet gripes which has been a headache to me for years, and I am sure many a mechanic and stockroom clerk will agree it causes us no end of grief.

It is the much-overlooked "oil filter." Of all the accessories we have been tacking on the motor or its vicinity, the oil filter is a "MUST" in P. M.

There are two very inconvenient points that should be standardized and simplified:

First, all units should be designed so an operator in the field can change a replacement element without the use of any tools. Many an oil filter has been run over the cleansing period because the operator did not have the tools to make the change.

Second, many a stockroom shelf is

littered with replacement elements they cannot use; i.e., the mechanic or operator, after much acrobatics of cleaning the units and straining of the eyes trying to make out the manufacturer's name and model, winds up by measuring the diameter and length, then when the replacement element arrives it is wrong. To overcome this, I recommend standardizing them into a minimum of sizes regardless of the capacities; i.e., if they are 2, 4, 6 or 8 gallons per minute, all manufacturers could call them by a given type or model, such as 2, 4, 6 or 8. The manufacturer could make a No. 2 model 3 in. in diameter 5 in. long, etc., and each maker could still use any materials or metals for his straining or cleansing process.

If these ideas are carried out it will be a great saving of time and money which is conservative maintenance.

ARTHUR M. RHODES,
Master Mechanic, Department of
Highways, State of Washington,
Olympia, Wash.

Light Truck Peeves

THE GRIPE DEPARTMENT,

DEAR SIRS:

My pet gripe is the inaccessability of the parts incidental to minor repairs of popular models of lighter trucks.

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For example, hose clamps installed before the fenders were put on, when factory men had ample room to work, when in the field the devil himself can't reach them.

On others, distributor changes require almost dismantling a motor because of the fan shroud, blade assembly and belts that interfere.

Some motors are so cluttered that the fuel pumps are obscured by other attachments making a much longer job than necessary changing them.

Valve adjustments can be made much easier if adequate room is provided around manifolds.

My contention is that trucks are manufactured expressly for the service they will render and that any modification in their design that favors service work done to them after they leave the factory is of distinct advantage to the manufacturer.

Howard E. Wood, Motor Equip. Maint. Supvr., Department of Public Works, State of New York, Hornell, N. Y.



THE role of truck transportation in an active military operation, is to bridge the gap from the ports and rail lines to the troops at the cutting edge of the Combat Zone. In the invasion now under way on the Continent of Europe, the responsibility for providing the means of bridging the gap is mainly that of the Transportation Corps, which controls and operates all truck companies in the Communications Zone of the European Theater of Operations.

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From a Motor Transportation viewpoint, the invasion may be divided into three periods. First, the initial securing of the beach head. In this period, supplies were carried by amphibious trucks from ships to dumps a few miles inland, and truck companies operated by the field army, transported the supplies from the beach dumps to the division truckheads. The second period commenced as soon as troops had advanced far enough inland for a Communications Zone to be established. During this period, ports commenced operation and rail lines were beginning to carry a certain amount of tonnage, but the main burden of transporting supplies from the ship to the troops, falls on truck transportation. The third period commences upon the establishment of an extensive rail network. During this period, truck transportation is used to clear the ports, to supplement rail as necessary, and to carry supplies and troops forward from rail heads to the Combat Zone. By this

The Role of Trucks in the **Invasion of Europe**

Transportation Corps clears ports, bridges gaps from ports to combat zone, hauls personnel, meets rapid shifts in battle areas

by JOHN F. SEIBERLING

Captain, Transportation Corps

f, Planning Branch, M.T. Div., Trans S., Fwd Ech. Hq Com Z. European Theatre of Operations, United States Army

time, rail is carrying most of the supply tonnages, but the final link is provided by truck transportation.

Two of the essential characteristics of modern warfare are the tremendous tonnages of supplies consumed by the military machine, and the rapid shifts in the flow of these tonnages from one area to another. Truck transportation has to be organized, not only to carry a staggering amount of supplies, but to be able to shift quickly from one sector to another, thus giving the transportation

system the flexibility which rail is unable to provide. Let us now examine this organization in detail.

The ports and beaches provide the first link in the supply chain on the Continent. It is essential that supplies and troops arriving at a port or beach be cleared from the actual port or beach area as rapidly as possible, in order that the ship which brought them may be permitted to return promptly for another load. The clearance of ports is primarily



Vernon L. Smith

BEFORE the appearance of inferior parts, especially the low grade wartime valves, our fleet was going along nicely. For example, even though

some of our tractors were getting pretty old, both in miles and years, each unit was hauling from 10 to 12 tons of paper board and paper cartons daily on runs to Chicago and other points in Illinois, Indiana, Wisconsin and Ohio, within a radius of 250 miles of Three Rivers.

The fleet consists of 11 tractors, one of which is used only as a spare, and 13 semi-trailers, three of which are spares and always available for repairing or loading during the day.

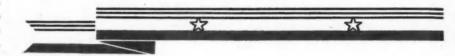
These semi-trailer combinations have a potential load capacity of 14 tons or better, but we rigidly adhere to a maximum of 12 tons, and average of 10 tons as a safety factor to



ONE GOOD SOLUTION FOR VALVE TROUBLES

"Despite the fact that our trucks had gone far beyond the pre-war trading-in period, both in miles and years, we were running each unit from 20,000 to 30,000 miles between valve grinding jobs; a good average was 25,000.

"Then came the low grade valves. Abruptly, the former average sank to 5000 miles. "Finally, we found that we could improve the situation materially by installing a modern valve refacing machine. This, combined with our valve maintenance program and a home made 'mike' for checking valve face accuracy, has enabled us to double the mileage of these wartime valves."



Valve Face "Mike" Doubles Valve

preserve our fleet for the duration and thereafter until new units can be purchased to replace them. Our oldest units are 1937 models; the newest, 1941 models.

Normally, the spare truck enables us to maintain our delivery schedules without interruption. But since the advent of low grade parts, we sometimes have two tractors in the shop at one time for a valve grinding job, or other major repairs, and with the three spare semi-trailers we keep shipments moving to war production centers with rarely any interruption. As aging trailers operating under grueling service also need "time out" for repairs, the spares answer this problem.

Valve Life Drops 80%

Despite the fact that our trucks had gone far beyond the pre-war trading-

Simple tool made by fleet shop detects untrue faces, prevents leaks and burned valves, reduces replacements. Fleet's tire experience good, bearings run bad

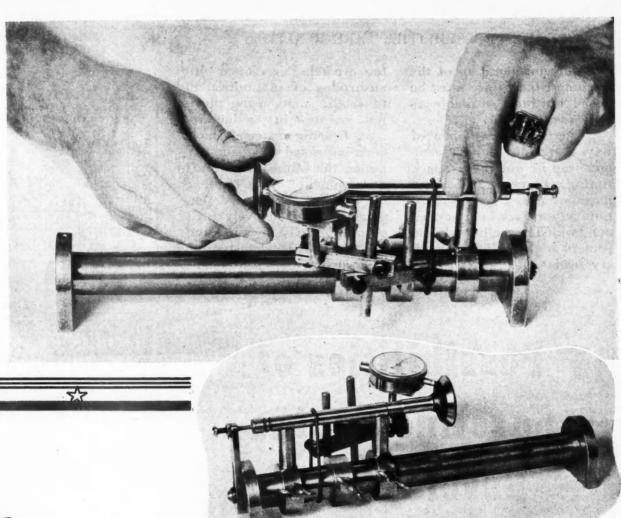
by VERNON L. SMITH

Fleet Superintendent. The Eddy Paper Corp., Three Rivers, Mich.

in period, both in miles and years, we were running each unit from 20,000 to 30,000 miles between valve grinding jobs; a good average was 25,000 miles. Then came the low grade valves. Abruptly, the former average sank to 5000 miles. Only an

occasional set gave us 10,000 miles. The material was too soft and premature failures came with unfailing regularity.

The high cost of low quality here is exemplified in having our units down five times as often as before,



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that in the face of a serious national labor shortage! For example, each regrinding job, or valve replacement of a full set or a single valve, involves an idle truck for one full day. Its earning capacity is nil for that day, and it is not hauling essential war materials to the points of need. Besides, in our shop the actual labor cost is never less than a full day for two men, and more often five hours extra on each job.

The reason that the truck is idle only one day while two or more days' labor is required, is that we aim to have two or three spare heads on hand ready to put on. One man pulls off the head for the valve jobs, and our head mechanic does the valve work—grinding, seating and installing inserts when necessary. The extra time spent in checking each valve and other engine parts while the head is

Unique, home-made valve face micrometer, above, is credited with doubling Eddy Paper Corp.'s wartime valve mileage. The device, made at a cost of \$12 for material, is used to detect untrue faces which cause poor seating and related troubles. Author states that two out of 12 new, wartime valves are found to be inaccurate by .001 in. and more. Upper view shows actual checking operation.

off, as well as making other repairs when and if necessary, is well worth while.

This costly condition simply had to be licked. It was straining our shop equipment and personnel to the breaking point and eventually might cripple our entire transportation setup. We spent a lot of time and money trying to get better quality valves, but to no avail, and the makers of our own brand of trucks told us it would be late in 1944 or later, before they could begin to supply us with quality parts, including valves.

Finally, we found that we could improve the situation materially by installing a modern valve refacing machine.

This, combined with our valve maintenance program and a home-made "mike" for checking valve face accuracy, has enabled us to double the mileage of these wartime valves. In other words, we have since been able to get 10,000 miles between valve grinding jobs and, in a few cases, up to 13,000 miles. Obviously, while this falls far short of being right, it has helped no end to relieve the acute conditions described.

We now check all valves, even new ones, before installing them. We have (TURN TO PAGE 110, PLEASE)

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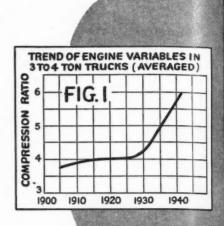
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"Our consideration of the engine of the future must be based on fuels available as well as materials . . .

"There are a number of ways that additional performance can be obtained: Spark timing will perhaps become more accurate . . . New ignition systems are being developed which may eliminate the present high tension secondary leads . . . Spark plugs,

too, are being developed with electrodes of platinum and tungsten; some, using thorium, are now in production... Bearing materials have been improved tremendously under the stress of aircraft development ... A number of today's commercial engines of comparatively high output have been using the sodium cooled exhaust valve ... Injection carburetion ..."

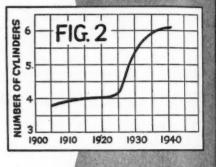


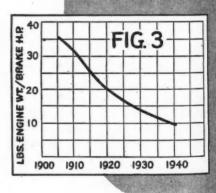
Possibilities of Gasoline Engine Development*

Engineer forecasts engines developing .55 to .6 hp. per cu. in., more efficient electrical units, improved lubrication, 90 octane standard fuel and water injection likely



Vice President in Charge of Engineering, The White Motor Co







Forest S. Baster

IN THE past few months many prophets have arisen to forecast the future of this or that, so I will be in very good company if I join them and at-

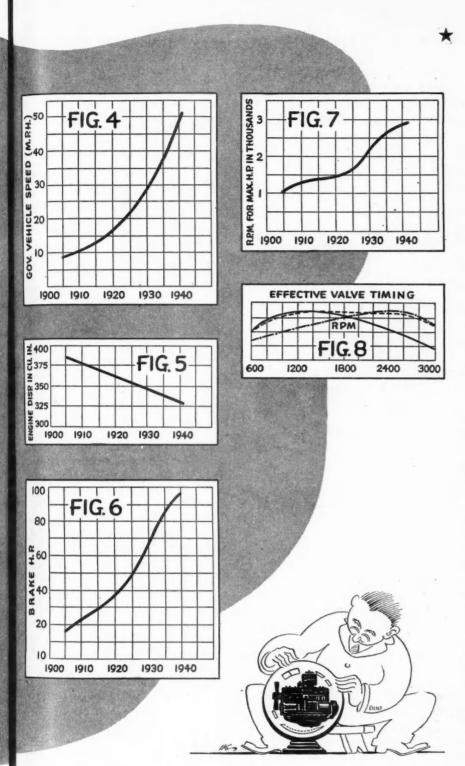
tempt to prophesy the things which

* Excerpted from a paper presented at the SAE Nautonal West Coast T & M Meeting at Portland, Ore.

we may expect in the future gasoline engine. In attempting to forecast, one must first recognize that the gasoline engine is a heat engine, and it is only through increased thermal and mechanical efficiency that we may expect to extract more actual foot pounds of work from a dollar's worth of fuel.

In presenting a paper of this type, perhaps it would be best to review a bit of the past history of commercial truck and bus engines with regard to compression ratios, average r.p.m. at peak horsepower, pounds per brake horsepower and average displacement. On Chart 1 (Fig. 1) we can see that the compression ratio stayed constant at $3\frac{1}{2}$ or 4:1 from approximately 1905 to 1925. At that time, a comparatively rapid increase in compression ratio started to take

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place and the average list in the trade journals, as of 1940, is approximately 6:1.

On Chart 2 (Fig. 2) is shown that for the same period, that is up to 1925, the average engine in a commercial vehicle had four cylinders; and in the next ten years there was a rather rapid swing to six cylinders.

On Chart 3 (Fig. 3) we show that over this same period of years the engine weight in pounds per brake horsepower output has gradually decreased from approximately 35 lb. in 1905 to a little less than 10 lb. in 1940.

Chart 4 (Fig. 4) shows that the average road speed at which the commercial vehicles has been governed has increased in a rather smooth curve from approximately nine m.p.h. to today's 50 plus m.p.h.

On Chart 5 (Fig. 5) the displacement of the average commercial engine has in the meantime decreased from about 380 cu. in. to approximately 330 cu. in.; and despite this decrease in displacement, the horse-power outputs shown on Chart 6 (Fig. 6) have increased about six times to a point where the average engine is very closely approaching 100 hp.

On Chart 7 (Fig. 7) you will note that the governed r.p.m. has increased meanwhile from 1000 r.p.m. to 3000 r.p.m. All of the above figures and charts were obtained by analysis of the trade journals over this period of years.

If we project these same curves on into the future with approximately the same rate of change, we will arrive at horsepower, speeds and weight per horsepower which, at first glance, appears to be a rather fair improvement. We believe, however, that we cannot just project them at the same rate of increase, for during the past few years, under wartime stress, we have made progress at a considerably faster pace than in normal peacetimes.

Our consideration of the engine of the future must be based on fuels available as well as materials which we will have available at this time. There have been remarkable improvements in gasoline and oil technology, as we all know, forced upon us by requirements for higher and higher outputs and BMEP for combat aircraft. For this engine of the future we believe that the non-premium gasoline will be at least 90 octane and the lighter alloys (aluminum and magnesium) will be priced competitively with cast iron. This abovementioned 90 octane fuel will be far superior in road performance to the 87-90 octane fuel which was available before the war as aircraft gasoline.

Higher Output Certain

Now let us look into the crystal ball and see what the future holds for us. Engines will, in all probability, be no smaller physically than those now in use but will have considerably higher output. In the not too distant future it is easily conceivable that we shall

(TURN TO PAGE 124, PLEASE)

VALUABLE AIDS FOR FLEETMEN

A selected list of the latest literature — books, pamphlets and catalogs — intended to help fleet operators solve maintenance and operating problems. They are more valuable today than ever before. All are free. To get your copies simply fill in the numbers on the postcard and mail. No stamp is needed.



L204. Engine Valve Manual

A new, 24-page manual entitled, "The Automotive Engine Valve," has just been published. The author, Walter Trefz, a prominent engineer, discusses the functioning and servicing of valves in non-technical and easily understood language. The text is profusely illustrated with photographs and diagrams that give a simple, clear-cut explanation of the subject.

What are the best materials for valves? What are bi-metal valves and why are they used? These and many other questions about valves, guides, springs, seat inserts and tappet clearances, are answered in detail.

One section of the 8½ x 10½ book describes the cause of valve failures and their correction: Overheating, deposits from combustion and distortion of engine structure. How to restore the valve mechanism to its maximum performance is shown by the text on Valve Servicing, Condensation, Refacing Valves and Valve Seats, and Valve Assembly.

This guide book to correct valve procedure will be a real help to both the younger mechanics and the oldtimers who have been through the mill of many years experience. To get copies just write L204 on the post-free mailing card.

L205. Valve Hardfacing Book

"How to Rebuild Worn Valves by Hardfacing" is the title of recently announced 12-page book of special interest to fleet operators and others whose maintenance problems have been aggravated by inability to secure replacement valves for internal combustion engines,

This $8\frac{1}{2} \times 11$ book groups worn valves into three classes: Those not badly burned or guttered; those which have the faces too badly guttered, pounded or burned to permit reclamation by grinding, and those which have deeply burned areas, gutters and cracks. Most of the text of the book deals with reclamation of the latter two groups, which ordinarily would be replaced, by building up the worn faces and other areas with special hardfacing material applied by means of the oxyacetylene torch.

Complete instructions are given for cleaning and inspection of the valves for cracks, preparation for hardfacing, application of the hardfacing metal and finishing. Illustrations show the best methods of performing the various operations.

Copies may be obtained by writing L 205 on the free postcard.

L206. Tire Manual

One of the most comprehensive manuals on the design and construction of pneumatic tires ever issued, published for United States Army training schools by one of the leading tire manufacturers, now also is available to civilians interested in the subject.

Consisting of 50 well illustrated pages, the $8\frac{1}{2} \times 11$ manual discusses the basic principles of pneumatic tire design, including pictured descriptions of the role which each part of the tire plays in its operation, and how tires are manufactured.

Measurements and other data on each of the important classifications of heavy duty military and civilian tires, and proposed load and inflation table for them are one of the features of the publication, together with tube, valve, flap and rim data.

A copy will be mailed to any fleetman who will write L 206 on the accompanying free mailing card.

L207. Tire Mileage Guidebook

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The complete story on how widebase rims can help fleet operators get more mileage out of their tires, wartime or pre-war, is covered in detail in a new manual recently off press. This is not a compilation by some manufacturer. Rather, it represents the best experience and engineering knowledge of the entire industry.

Entitled, "Correct Wheel and Tire Combinations," the book covers the subject thoroughly, enabling every fleet operator to get peak mileage with maximum recaps, because of the sounder casings that result from the proper tire and wheel combinations.

There are thousands, tens of thousands, of trucks in service today that are equipped with improper tires and rims. The data contained in this guide-book will enable you to be certain if all your wheels are rolling efficiently or wasting your rubber, mileage and money. It's easy reading, doesn't cost a penny but may save you hundreds of dollars. Write L 207 on the postcard for your free copy.

P274. New Synthetic Tread

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A tread design for truck tires of synthetic rubber which retards the growth of tread cracks and reduces



the running temperatures of the tires by as much as 50 deg. is announced by The Goodyear Tire & Rubber Co. Rubber experts have been seeking means for overcoming synthetic rubber's tendencies to overheat and crack when used in truck tires and Goodyear engineers assert that the new tread design brings synthetic rubber nearer than ever to the performance goal of prewar truck tires of natural rubber.

In Goodyear's new "Hi-Miler S Rib" tread, as it has been designed, retarding of crack growth is said to be accomplished by altering the conventional, continuous tread ribs to include terminals at approximately every half inch in the crevice between the ribs. It is in these crevices that damaging breaks or cracks usually originate.

Reduction of the heat is said to be accomplished by a completely ventilated shoulder on each tire instead of the conventional unbroken rib-type shoulder. Laboratory tests have shown that the new type of shoulder will reduce maximum running temperatures in truck tires by as much as 50 deg. under certain circumstances.

Goodyear officials emphasize that the same long-wear attributes of the unbroken circumferential ribs are maintained in this new "Hi-Miler S Rib" tread designed especially for synthetic rubber. Despite the apparently jagged or wavy nature of the

FOR FLEET OPERATORS

The latest in shop equipment, supplies, replacement parts and accessories developed by manufacturers for fleet operators. For more details of any product described, fill in the number on the postcard and mail. No stamp needed. Also use the postcard for additional information on any product advertised in this issue.

NEW PRODUCTS



ribs, according to Goodyear, the ribs are still continuous.

Use Free Postcard for More Details.

P275. Synthetic Vulcanizer

A new electric heavy duty vulcanizer that is guaranteed to repair tears up to 7 in. in synthetic truck and passenger car tubes has been announced by the Equipment Engineering Co., Catonsville, Md.

The new vulcanizer, also ideal for use with natural rubber tubes, repairs rubber valve stems, cures full splice and cures both outside and inside reenforced repairs.

Electric thermostatic control assures perfect pressure vulcanization. All electrical parts are guaranteed for the life of the vulcanizer. A continuous supply of repair materials is assured by the manufacturer.

Use Free Postcard for More Details.

P276. Wet Flashlight Battery

A rechargeable wet flashlight battery for industrial use built on the principle of the automobile wet storage battery, especially valuable for operations where long continued and steady usage of flashlights is necessary is announced by The B. F. Goodrich Co., Akron, Ohio. The batteries are being sold with a six months' guarantee which authorizes replacement if failure is not due to abuse or



The company claims that the wet storage batteries are more economical than dry cells when flashlight service is required in volume, or where batteries require replacements more than once every two weeks. A freshly charged wet battery will give about 3 hr. of constant Batteries light. can be used in the standard three or five-cell

dry battery case with the use of spacer plugs.

Substantial savings when the wet batteries replace the dry cells is one (Turn to Page 178, Please)



Fleet shop superintendent tells how major maintenance problems were solved and gives hints on axle, steering and brake troubles. Parts salvage program outlined

by EDGAR B. OGDEN

Shop Superintendent, Consolidated Freightways, Inc., Spokane, Wash.

Tips on Diesel Engine Maintenance*



Edgar B. Ogden

OUR entire fleet of 160 trucks is equipped with Cummins model HA-6 engines except 18 of them which are equipped with Cummins model HS-6

or the supercharged engine. All of the latter are stationed at Spokane.

We have set engine overhaul on a 70,000-mile basis and adhere to it quite closely. Of course, at times we must perform this sooner but only in rare cases do we allow the mileage to exceed this.

** Excerpted from a paper presented at the SAE National West Coast T & M Meeting at Portland, Orc.

All connecting rods and bolts are magnafluxed before they are used again.

This is also true of the cast-iron piston. By the use of the Magnaflux we have virtually stopped all motor failures due to broken pistons and connecting rods. I might say that at one time with us this was a major problem. We have found that it does not pay at all to re-ring an engine. The average result of re-ring jobs was about 5,000 miles of service. To rering a Cummins takes as long as putting in new sleeves, because we find that it is a poor policy to allow the sleeve rubbers to remain in for more than one overhaul period. The only difference in time between re-ring and replacing with rebored sleeves is the actual time boring the cylinder sleeve itself. Very little metal is lost from the sleeve as we bore in .010 stages up to .60.

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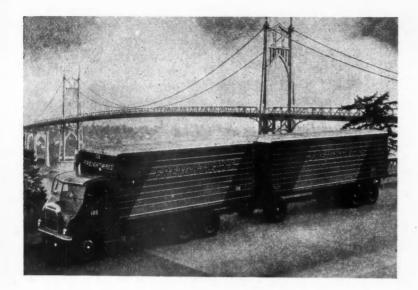
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The piston wears very little we find except at the ring lands and on the cast-iron piston this does not reach such proportions that piston can't be used four or five times, unless Magnaflux shows a crack in it. From this you can see it is really an advantage not to bother with re-ring jobs.

A problem that used to bother us quite a lot was the sticking of the piston rings. This trouble has been overcome to a very large extent by the use of a Keystone ring in the top ring groove. The ring cross-section

RE-RINGING: "We have found that it does not pay to re-ring an engine. The average result of re-ring jobs was about 5000 miles of service. To re-ring a Cummins takes as long as putting in new sleeves, because we find that it is a poor policy to allow the sleeve rubbers to remain in for more than one overhaul period.

RING STICKING: "This trouble has been overcome to a large extent by the use of a 'Keystone ring' in the top ring groove.



TIMING INJECTORS: "Due to the construction of lower valve lifter rockers, it is possible to change the timing a few degrees by moving the rocker assembly toward or away from the camshaft. By the use of different thick-

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ness gaskets this can be accomplished. With the use of a special jig which we made up this can be checked in just a few minutes as the engine is being assembled . . . Inasmuch as it is difficult to read the dial indicator at the exact

starting point, we do all our setting from 30 deg. before top dead center.

ENGINE OIL: "The greatest thing one has to fight in a diesel engine is dirty oil and sludge . . . In order to overcome this we use another oil filter in connection with the oil filter that is on the Cummins engine as standard equipment. Also, we are installing a float in the oil sump, so that we may use the top oil rather than the oil from the bottom of the sump as is standard . . . This is a great improvement; stops 75 per cent bearing scoring."



is shaped somewhat like a keystone, with the two sides of ring that seat on ring land tapered and face that rides cylinder wall straight. Also the inside of ring is straight.

This ring acts in two ways. First, as the ring wears it becomes looser in the ring groove, which fact keeps the ring from sticking. Second, due to the taper it tends to centralize and stabilize the top of piston in cylinder.

The first action is by far the most important. The latter is also important in that it tends to stop "piston alap," which is quite noticeable in the Cummins supercharged motor when cold, due to the fact this piston is not only cam ground but also taper ground, the bottom of skirt being

.005 larger than the top of skirt, just below the bottom oil groove.

This is done, I am informed, to take care of the expansion of piston, there being no other means of compensating for this as it is a solid piston.

We find that the ring lands wear quite fast on the aluminum piston; the average life of a top land is about 140,000 miles.

In order to conserve in these times of shortages, we have done two things to increase the life of the aluminum piston. First we have managed to secure a Keystone ring that is .010 wider than standard and by so doing it allows us to machine the top groove true again. Second we have cut the top groove out to 5/32 and use a straight ring in place of Keystone. We are keeping away from the latter as much as possible as it shortens our

engine life about 1/3 or more.

The former, however, works out very well; in fact, as well as when new, which fact doubles our piston life.

Timing Injectors

A problem that I am sure that is slighted by some operators is the timing of the injectors. I have done quite a bit of experimenting on this and find it worth while to spend a little time to get the injector timing set correctly.

Due to the construction of lower valve lifter rockers, it is possible to change the timing a few degrees by moving the rocker assembly toward or away from the cam shaft. By the use of different thickness gaskets this can be accomplished. With the use of a special jig which we made up this can be checked in just a few

ONE OF THE TROUBLES

"Drivers, today, are the direct cause of our greatly increased volume of repair jobs.

"At the start of our PM program, we spent a thousand dollars for governors for our tractors. Today, there is not a single governor on our engines. We found that the drivers were putting stones, pieces of wood and other foreign material in them, to keep the governors open.



C. G. Brokowsky

"At one time, we would not have wasted a minute in discharging a driver guilty of this practice. Today, we are forced to tolerate this condition, because if that driver is fired, the next one hired may be twice as careless.

"Despite the various troubles outlined, our fleet continues to roll on, thanks to PM. We have followed our preventive maintenance program as religiously as we could. It has been our one guarantee that our tractors go on the road when needed."

War-Born Troubles Curbed by War PM

Inferior replacement parts, overloaded military B/L loads, shortage of mechanics and careless drivers are some of the troubles that have been mitigated by a good PM

by C. G. BROKOWSKY

Divisional Maintenance Manager, Acme Truck Rentals, Detroit

WO and one half years ago we instituted a preventive maintenance program for the 40 truck tractors we service in our division. Since Acme is a subsidiary of Interstate Motor Freight Lines, renting these tractors to them and thus have all revenues regulated by the Interstate Commerce Commission, it was essential that our repair costs be kept well within line. We are not allowed

to charge Interstate more than the exact cost of the actual repairs. A number of other considerations, largely born out of war conditions, indicated that a preventive maintenance program would be the cheapest and most effective way of guaranteeing that our tractors would remain on the road and operate in a decent state of repair.

These considerations were: 1.



Parts largely inferior to the pre-war products; 2. government bill-of-lading loads weighing in excess of what we delegate for civilian shipments; 3. an increasing shortage of mechanical specialists; 4. drivers inferior to the pre-war driver. All of these considerations pointed directly to the adoption of a preventive maintenance program.

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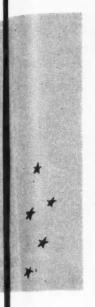
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At the outset it should be mentioned that our program is not as efficient as it would be in normal times. But it can be said, and this we regard as a very real and valuable contribution to the operation of our fleet, our program has kept our costs level with those of corresponding prewar periods. This is saying a good deal since some companies have found the increase in repairs and their costs so mounting that they have been disposing of their power to other agencies just to get rid of the maintenance headaches.

Our fleet covers the state of New York, Ohio, Indiana, Illinois and Michigan. The tractors operate as



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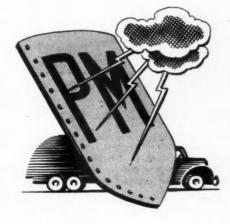
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over-the-road common carriers and are averaging about 1300 miles per week per unit. To maintain this fleet we operate one garage in Detroit where we do 85 per cent of our own repairs and farm the remaining 15 per cent out to other garages. Most of this 15 per cent is accounted for by line boring, machining and such minor road repairs as may occur while the tractor is in transit.

To facilitate road repairs and to assure ourselves of reasonably adequate service on these minor road repairs, we have chosen carefully and made connections with various garages situated along the routes over which we normally operate. These garages are chosen both from the standpoint of quality of service they offer and from the speed with which they may effect our repairs. If road breakdowns are of a major nature, we tow the tractor into our Detroit shops and do the job there ourselves. We have found for major repairs that this is the fastest and most efficient way of handling them. The road ga-



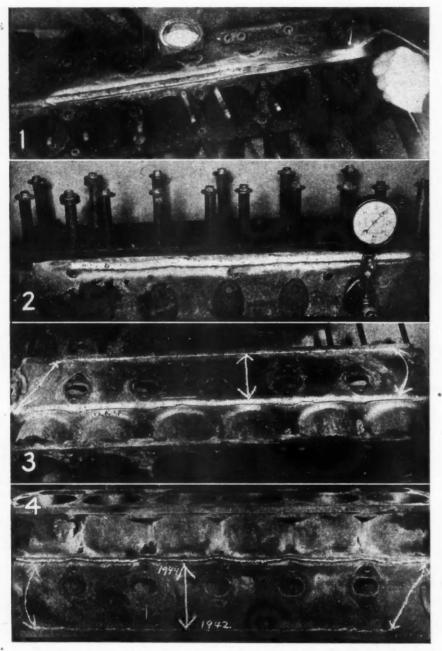
rages cannot do this work as we like to have it done, simply because of the shortage of skilled labor.

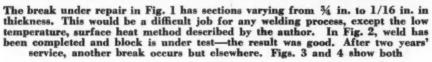
When we instituted our preventive maintenance program we based it on a mileage figure rather than a time schedule. Our experience convinced us that this would be the most feasible for us since tractors would receive more attention, unit for unit, throughout the year. This we believed the

soundest basis of any workable and efficient preventive maintenance program. This seemed to us to be particularly so in view of general conditions, the scarcity of parts, the type of mechanics and drivers currently available. Briefly, these two factors combined mean that tractors need repairs much more often than they did in pre-war days. We wanted to catch part failure while it was still in the process of developing and before it caused a major repair job, entailing loss of the tractor for work and the greatly increased repair cost.

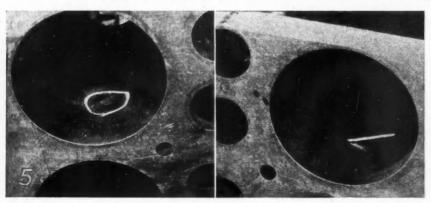
We set our figures for the inspection of the tractors at 5000, 10,000 and 20,000 miles. Since we run our tractors around 1300 miles per week, this means a very good inspection every four weeks or less. We drew up a definite schedule of inspection to be followed for the arbitrarily-set mileage figures. We printed forms for each of these mileages and see that all items listed are checked off by the mechanic doing the work. All forms

(TURN TO PAGE 70, PLEASE)





Reboring this block uncovered holes in Nos. 1 and 6 cylinders. A sound repair was made by enlarging hole and using 1/16 in. bronze rod and No. 1 torch tip





Another example of a difficult engine block repair made successfully with low temperature surface heats and bronze rod

Cylinder

Low temperature bronze



Alex. F. Morton

REGARDLESS of the method selected for the repair of engine blocks or cylinder heads, a large percentage of such repairs, either welded or

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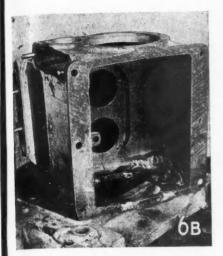
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mechanical, require the help of some sort of seal or stop leak, liquid or

A job like this is a natural for bronze. Fast, durable repair without distortion





Preparation consisted of grit blasting. Broken segments were bolted to the case and tack welded. Article gives details

THE ART OF MAKING TEMPORARY REPAIRS STAY PERMANENT

Alex. F. Morton's articles have been characterized by abundant successful examples that certain unorthodox welding practices can be made to produce excellent results. In this article he points out, with numerous good examples, that cracked cylinder heads and engine blocks can be repaired successfully by the low temperature, surface heat technique and bronze welding rod, despite the fact that the walls

through which cracks occur may vary in thickness along the line of even a single break.

A large percentage of such repairs require a seal to make them watertight. For this and for the fine, hard-to-detect cracks the author recommends metal spray — again, an unorthodox procedure. However, such repairs, considered only temporary at the time they were made, have been in service for two years.

by ALEX. F. MORTON

Copyright 1944. All rights reserved by the author

Head and Engine Block Repair

welding makes successful welds on parts having both thick and thin sections

metallic, to make the repair water tight.

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The methods to be described do not differ in this respect from any of the several other methods that can be used. They do, however, have a vast difference in the cost of such repairs. Expense is reduced by less time used on the part of the mechanic, resulting in a shortened out of service period for the truck, of which the engine

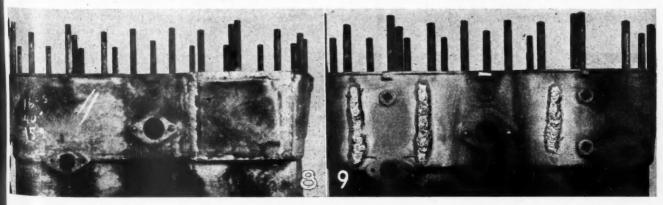
block or the cylinder head is a part.

Engine blocks and cylinder heads are "guaranteed" to stand up until they break. Too many unknown factors enter into the reclamation of these vital parts to guarantee anything else. A thin wall in a casting undiscovered by the welder many times junks the part after much time and material has been expended in attempting its repair.

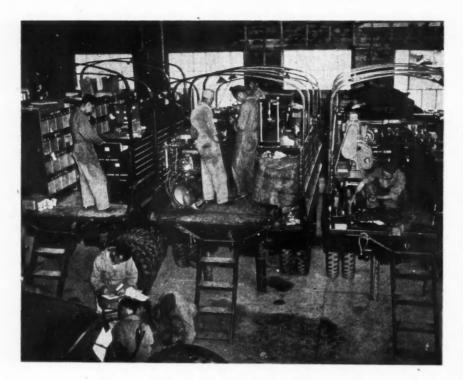
The upper section of the block, shown in Fig. 1, onto which the cylinder head is fastened, is about $\frac{3}{4}$ in. thick. The water jacket, at the point where it joins the thick upper section, has a thickness varying from $\frac{3}{16}$ in. down to as little as a $\frac{1}{16}$ in.

The wide range in the volume of heat obtained by the several different size welding heads or tips, with the (TURN TO PAGE 80, PLEASE)

Thick and thin sections on this job presented no problem and there was no warping of the bore. Machining, too, was simple Here, again, bronze proved to be the "cure all" for repairing this engine block. Blackened areas show extent of heat spread



OCTOBER, 1944



Profile of a Mobile Maintenance Unit in France

Speed and efficiency characterize typical Army field maintenance company in France; 204 major repairs completed in three weeks

by N. W. EVELETH

First Lieutenant, Transportation Corps, U. S. Army



WITH U. S. ARMY FORCES IN FRANCE— As an old "parts peddler," I again felt like

I was walking into any large fleet operator's garage in the United States. I was not burdened with catalogs, for to this "fleet" all of the

selling had been done many months ago. Delivery had been made in the United States, the material then shipped to England to be stored in warehouses awaiting D-Day and now it was being used "Somewhere in France" to keep the thousands of jeeps, semis, six-wheelers, tractors,

cranes, DUKWs (Ducks), and all the moving equipment in this area rolling.

The building I entered had been a public garage before the Germans came. They had used it for the repairing of their Panzer vehicles. The scene before me was identical with that I have seen in every large fleet operator's garage in Minneapolis. Detroit, New York and San Francisco. I walked down the ramp from the entrance past the gasoline pumps and saw an office to my right with a sign on the door reading, "Job Order Officer." Thinking this to be the logical place to start, I entered the office and was greeted by First Lieutenant Aigner who used to operate his father's fleet maintenance garage in Chicago. Lieutenant Aigner commands this United States Army Medium Automotive Maintenance Company and is assisted by Lieutenant Schmnki, his shop officer from Waukesha, Wis.; Lieutenant Kuezi, his operations officer from Lynn, Mass., and Lieutenant Stephens, his supply officer from Norristown, Pa.

Lieutenant Aigner told me the story of his organization. It had been in existence exactly two years the day I was there. They also were celebrating another anniversary, for they had left the states just one year previously

on that day.

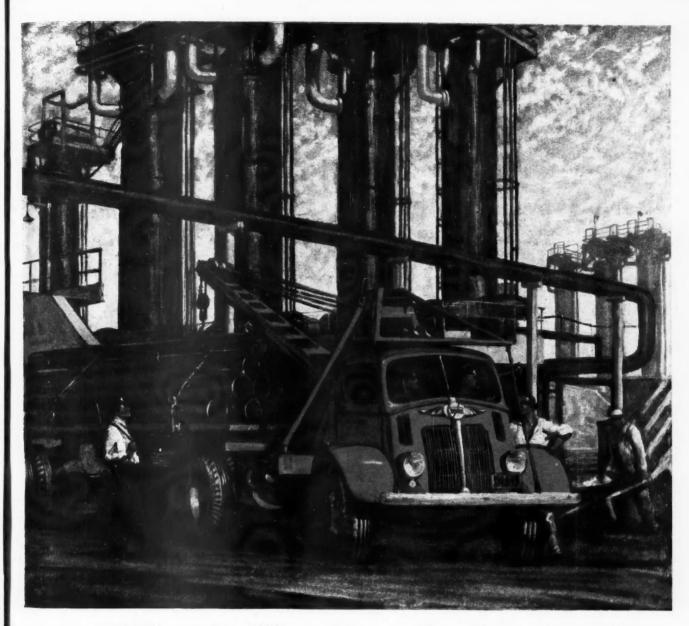
His unit had come over to France from England with enough rolling equipment to carry their base stock, repairing equipment and tools, and all personnel. His organization is divided into two units, each composed of a supply and maintenance section. This is done so that one-half of his organization can move forward with the front and the other half carry on in the garage.

ir

Master Sergeant James Chaney, who left his home in Osela, Miss., to be a gold prospector in Idaho, is the shop foreman. As we started a tour of the shop he showed me his operations board. In less than three weeks they had completed two hundred and four major repair jobs and of that number only three are "deadlined" due to lack of parts. That is a record that the best civilian fleet could be

proud of!

We walked down the ramp past the wash rack, on which a 2½-ton six-(TURN TO PAGE 142, PLEASE)



20-Million Rubber Trees for Los Angeles

SIX HUGE SYNTHETIC RUBBER PLANTS

in Los Angeles, now in full operation, are producing the equivalent of 20-million Hevea trees. Appropriately, motor trucks—which are dependent for their existence on an adequate rubber supply—have played important roles both in

the speedy building of these plants and in their daily operation. Scores of Super Power Whites bring an endless flow of raw materials needed for the continuous production schedules of these magical plants. Because rubber continues to be precious, White has a definite plan of tire conservation available to truck owners as part of White Personalized Service. Every Branch and Dealer has it available for every owner.



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THE WHITE MOTOR COMPANY . Cleveland, Ohio, U.S.A.

A limited number of new Super Power White Trucks is now being produced for essential asservices. Your White representative will be glad to help you make application.

FOR MORE THAN 40 YEARS THE GREATEST NAME IN TRUCKS

BUY MORE WAR BONDS

Here's Where the Trouble Starts!



There's no way out! When a car starts eating gasoline and oil—it's a warning that worn bearings are forcing excess oil into cylinder assemblies, choking pistons, piston rings, spark plugs and valves with carbon. Neglect of this condition

endangers hard-to-get metal parts and invites costly crankshaft damage. Bearings are vital to America's war effort—replace them only where necessary—and then, install Federal-Mogul Oil-Control Bearings to restore power, pep and economy!

THE DAWN OF V-DAY IS OURS TO DETERMINE!

Our boys can push ahead "over there"—only if we keep our cars, trucks, buses and tractors rolling forward with war workers, materials and food over here. Your job of keeping America's vehicles at the peak of running efficiency is vitally important—the success of other jobs depends upon it—and remem-

ber, just any pair of hands can't replace your skill. We are making every effort to supply all of your essential service bearing needs promptly-let's work together for victory!

FEDERAL-MOGUL SERVICE • DETROIT 1, MICHIGAN
DIVISION OF FEDERAL-MOGUL CORPORATION

When Necessary Replace With Genuine

FEDERAL-MOGUL

Oil-Control Bearings



For the Final Push...BUY WAR BONDS NOW!

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by ROBERT F. BAHL

Correct Answers on Page 152

Do you have a nostalgic yearning for the little red schoolhouse? Then maybe this short test will bring back a bit of the old golden rule days. With 10 points for each correct answer, see if you can't go to the head of the class with a mark of 100; 90 is very good; 80 good and 70 fair. Answers are on page 152.

Where would your wandering footsteps have to take you to get you to "Little Detroit"?

a. England

c. New Guinea

b. Canada

d. Michigan

The chief of the U.S. Military Mission to Moscow (he's Maj. Gen. John R. Deane) ought to know, and he rates American aid to Russia in this

- a. Trucks, planes, food
- b. Planes, food, trucks
- c. Food, trucks, planes

Of course, you can always read the instructions, but you can also get the general meaning of standard road signs by their shape. Match up these shapes with their meaning.

- a. Octagonal 1. Railroad Crossing
- b. Round

of

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- 2. Slow Down
- c. Diamond 3. Information
- d. Square 4. Stop

It's a good rule always to match tires on dual wheels as closely as possible. But, just in case one of the tires should be a shade larger than the other, the larger or less worn tire should be placed on . . .

- a. the inside
- b. the outside
- c. makes no difference

Private Johnny, driving that halftrack for Uncle Sam, knows the answer to this one, but do you? "Boss man" of the Army's driver training program is . .

- a. Brig. Gen. W. R. McReynolds
- b. Lt. Gen. Alexander Patch
- c. Col. R. W. Johnson
- d. Brig. Gen. Robert H. Wylie

True or false . . . take your choice. Over 50 per cent of the supply tonnage going across the Normandy beach was petroleum products.

a. True

b. False

Jeepers! Reconditioned jeeps purchased by civilians in Iowa . . .

- a. are prohibited from using state highways
- b. must pay truck license fees
- c. must be equipped with a speedlimiting governor

When G.I. Joe refers to a "crab," he means . . .

- a. a flail tank for clearing minefields
- b. an amphibious truck
- c. a truck traveling in reverse, because there was no room to turn around
- d. the commanding officer

Here's the \$64 question . . . but don't try to collect the money. What is the cost of those giant 1/3-ton tires used for off-the-road hauling?

- a. \$32
- c. \$280
- b. \$64
- d. \$750

10

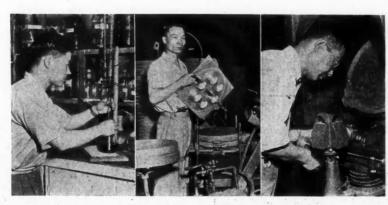
When you talk of lead in connection with trucks, you immediately think of the battery . . . but we'll give you a credit of two points for each of five other places on a truck where lead might be used.

- 1. -

Charles T. Walker, formerly of O.D.T., has been formerly of made manager of the new Cincin-nati branch of the Trailer Co. of America. In the America. In the heart of the Cin-



cinnati trucking
district, the new branch covers an area
of over 25,000 square feet and is completely equipped for trailer repair and maintenance service.



Three students who saw active service against Japanese with aviation ground crews in combat areas, undergo train-ing at the Wilkening Manufacturing Philadelphia. From left: Veng Song Doo in laboratory; Sze Min Hu

working on sand molding machine in foundry, and Kuang Chia Hu in in-spection department. These three cap-tains of the China Air Force are en-gineers and are learning the business of making aircraft piston rings.

CHI	ECK	B,000 MILE FREQUENCY HIGHWAY AUTOMOT	TIVE EQUIPMEN	
DATE INSI	m m	arch rv. 44	No I	Detrack
MEE	wel	MODEL AT	5.6	UNIT NUMBER 3960 -14
THEOL"		MILEAGE	1,	STEERING
/	Inspect and Tighten Water	Reading LVSTV Miles COOLING SYSTEM or Defore Testing System Tighten Hose Connections. r Pump and Repack if Necessar ing System for Leaks.	36. 37. 38. 38.	Tighten Steering Housing to Frame. Tighten Pitman Arm Adjust Clearance in Steering Gear, Secure Steering Post, Covi Bracket: CLUTCH Test Clutch Pedal Clearance to Toeboard and
V 6.	Tighten Rad:	ator Tie Rods.	40.	Set to Specified Clearence. Test Clutch for Grabbing and Slipping.
y 10.	Tighten Elec Tighten Cyli	ERGINE ery Box, Cables and Connection trical Connections under Desi nder Head Bolts Belt Adjustment	1 41. 42. 43.	Check for Grease Leaks. Tighten Bell Housing Bolts. Inspect Condition of Emergency Brake System and Adjust
12. leading / 13.	Clean and A	igion, with Throstle Open 12 14 15 16 7 8 Sperk Pius just Distributor Points Che	44. 45.	ORIVE Lime Inspect Propeller Shaft and Universal Joints. Fighten all Propeller Shaft and Center Bearing Mousing Bolts
LM. 15.	Check Engine Inspect Igni denser. Test Starter Service Car	Timing. tion Wires. Test Cosimend Co	V 48.	REAR END Tighten Differential Housing Bolts and In- spection Cover. Inspect Pinion for Backlash and Cerrect. Inspect for Greese Leaks. Tighten Spring Clips and Adjust Shaghibs.
19. 20. 1M. 21.	Check General ing Rate. Check Condition	uretor Base and Adjust to Iditor and Voltage Regular Char ion of Headlights, Tail Ligh Instruments and Windshie	78- V 50.	WHEELS AND BRAKES Tighten or Replace Axle Flange Studs Tighten Rim Lugs. Test Wheels for Trueness. Check Fluid Level in Master Cylinder Reservoir. If Low Check Lines for Leaks.
V 23. V 24. V 25.	Adjust Valve Check Oil Pr Tighten Mani Inspect Muf Check Fuel I	s to Specified Clearance easure and Oil Lines for Leaf fold Nuts Her and Exhaust Pipe. Lines and Tanks for Leaks. Bediment Tree.	\$53. \$4. \$55. \$56.	Check Air Compressor and System for Leaks. Clean Compressor Pump Air Cleaners. Check Vacuum System for any Defects and Adjust Brakes. Front and Rear. Drain Air Tank.
V 27. V 28. V 29. √ 30.	Test Fuel Po Inspect Cor Bolts.	mp Pressure. dition, Tighten Motor Suppo or Setting with Techometer	\$ 58.	800Y Check Front Fenders and Report. Tightes Body Bolts, Inspect and Tighten Body Hardware. Examine Windshield and Door Glass. Inspect and Repair all Elec-
R.M. 31. RM. 32.	ings and A	FRONT END Knuckle Boits and Wheel Ber djust if Necessary. heels for Correct Caster, Cam		trical Wiring. Inspect Condition of Seats and Lazyback, Exchange if necessary.
33. 14. 34. 15.	Inspect and Inspect and Tighten Spr	Tighten Steering Arms. Adjust Tie-Rod end Drag Lic ing Clips and Adjust Shacklo prings for Breakage.		FIFTW WHEEL Inspect and Tighten all Bolts. Rebush if necessary, charging mechanica time to repair order.
	8	this	- 11	E. King
	711	a srani		Sw. Clark

Three inspection periods have been established and 8½ x 10¾-in, work sheets printed for each. Above is the first of Acme's three PM check sheets

War-Born Troubles Curbed by War PM

(CONTINUED FROM PAGE 63) cover everything that could possibly require repair at the respective mileages. They are similar with the exception of the 20,000-mile form which calls for a rod and main bearing check. As each item is covered, it is checked off on the form, which is filed for future reference. The foreman also keeps his own book on the kind of repairs made, when they were made and by whom. The foreman goes through his book daily, tractor by tractor, which are listed in numer-

ical order. Thus, the foreman's book and the filed forms give us a double check.

Supplementing these forms, and furthering the PM program, is the tractor defect report that is filled in by the driver and surrendered to the garage after every trip. This is a handy little report form and leads to the catching of part failure quite frequently before it would be caught in our scheduled inspection.

While the foregoing outlines the established procedure, we have found

it expedient to conform to this program more or less flexibly. Thus, we give our tractors a thorough oiling and greasing every 1500 miles. This is a "must" in our garage. We keep a record of mileages on our grease charts and it is referred to every day. This greasing routine has been a great help in reducing our repair costs, since it also has led to the catching of minor repairs before they develop into major jobs.

By following out carefully all work outlined on the forms, we have managed to keep our repairs down close

to the pre-war level.

At present, we employ 12 men in our shops: six mechanics, three mechanics' helpers and apprentices; two lubricators and one washer. Most of these men work from 8:00 a.m. to 4:30 p.m. But we keep one mechanic and one helper working from 4:00 p.m. on until all minor tractor repairs garaged that day are completed. These men also make the numerous final adjustments on departing tractors.

Mechanics Not Specialists

Our mechanics, while good, are not the specialist type we would prefer using for a PM program. We have found that the specialist is the man who most quickly can spot approaching trouble in his particular field. He is the man who can make repairs most rapidly and most thoroughly. But we can't get specialists, so we have compromised on the all-around man.

We even would have trouble keeping our all-around men if they could get releases from the labor board, because they could command much higher wages from any dealer agency garage, where rates of pay are not regulated as ours are. In Detroit, many dealer garages are paying \$1.75 per hour. We can't even come close to this figure. By watching the mechanics carefully, we have noticed that invariably they exhibit some particular preference for some particular type of repair. Where possible, we utilize this inclination to our own advantage.

Drivers Are Careless

Drivers, today, are the direct cause of our greatly increased volume of repair jobs. In the first place, the driver of today does not value his job. There is another one just around (TURN TO PAGE 72, PLEASE)



THE FIRST LAP IS RUN BY THE LOCAL TRUCK

TALF-TON pick-ups, giant trailers, trucks of every size and species! You see them everywhere...heading for or from railroad freight yards or stations, piers, warehouses, war plants...covering the first lap in the multi-marathon to the battle fronts. Most of today's local freight is war freight, and the trucks assigned to this vital work must be on the job when, where and as needed.

That so many trucks are still in service is due largely to the magnificent job being done by truck maintenance men. No one knows better

than they of the vital need for sturdy, trustworthy equipment. And no one more thoroughly appreciates the dependability, long-life and ease of maintenance that are built into every Exide Battery.

EXTRA DUTY

When you buy an Exide, you Buy to Last. Take care of it, and Save to Win.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

Остовек, 1944

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URNAL

Use postage-paid card inserted in this issue for free information on advertised products

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1	COOLING SYSTEM Full Kadiston Melors Testing System. Inspect and Eighten Hase Consentions. Fighten Mater Funy and Expect it Necessary. Emport Conling System for Leaks.	AM.	Adjust Clearance in Steering Stagering Post Coal Bracket. CLUTCH Test Clutch Pedal Clearance	Geer. Secure		
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4	ENGINE Emspect Settery Son. Cables and Convections Tighter Electrical Connections under Deals. Tighten Cylinder Head Soite	40	Check for Greeze Leaks. Tighten Bell Housing Bolts. Inspect Condition of Energenced Adjust.	y Brake System		
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14	*Clean and Adjust Spark Plugs. Clean and Adjust Distributor Points Cleak Cap and Rotor.		· dearing Housing Bot	TR	ACTOR DEF	TECT REPORT
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4 12	Check Dil Pressure and Util Lines for Leaks. Tighten Manifold Note. Inspect Muffler and Execute Pape.	6 50	Fighten or Replace Aul-	Brakes	**********	Oil Pump.
144.28	Test Fuel Pum Pressure, Rehited	- X	Check Ffull Level in Was voir. If Low Check Li Check Air Compressor Sy	Cab		Radiator
G 30	Inspect Condition and Eighten actor Support Woltz. Test Waverner Setting with Encharater.	3 61 K 52	Clean Compressor Pump A Check Vacuum System fo Algust Brakes, front Orain Air Tank.	Coils		Springs.
V_31.	Gheck Red and Main Jearings Test Play in Knocker Bolts and Wheel Beac- ings and Adjust if necessary.	1.	Clinck Front Ferniers and	Crank		Starter
AM12	Feet Front Wheels' for Correct Caster, Conter and Toe-in. Insurer and Fighten Streeting Area.	Y 8	Fighten Body Wolts, Inc. Frepert and Repair Att Exercise Virulative Id and	Distributors	esercitaries (Spark Control.
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	8 Am	(Blumon	Foel Pump		Wheel Bearing
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	azm. anjustment mant a. v. REPGIRS RELDED	aoth	to these marks \$12. Seeding to	Hose Connections		************************
			side with profesation,	Driver's explanation	of above defects:	

War-Born Troubles Curbed by War PM

the corner, if we get rid of him. So far, we have not found any answer to this one.

Drivers torture tractors far beyond normal wear and tear. They push the tractors to the limit without regard for tires, parts, etc.; they come up hills in high gear, a tremendous and unwarranted strain on motors; they try to pass everything on the road... all things leading to increased repairs and to the quick depreciation of equipment.

At the start of our preventive maintenance program, we spent a thousand dollars for governors for our tractors. Today, there is not a single governor on our engines. We found that the drivers were putting stones, pieces of wood and other foreign material in them to keep the governors open.

At one time, we would not have wasted a minute in discharging a driver guilty of this practice. Today, we are forced to tolerate this condition, because if that driver is fired, the next one hired may be twice as careless.

Parts Situation Troublesome

Added to our driver trouble are the inferior parts we are getting. For instance, bearings. From the pre-war brand we counted on getting and did get from 35,000 to 50,000 miles. To-day, we have found it wise to check them at from 12,000 to 15,000 miles.

The bearings, today, seem to be of a lead composition; very soft, nicking easily and leading to quick failure.

We have had more crankshaft trouble the past year than we had the previous five years. This has led to us doing one thing that is tending to keep our repairs within reason. The minute we hear the least noise we tear the engine down, replace the bearings and give the crankshaft a grind. We don't wait, as we did before the war, for the noise to develop into a major repair job.

It does not seem to matter what make of bearing we buy. We have found them all of inferior quality. While we have many more crankshaft grinds, we will not grind further than forty thousandths under. If a crankshaft needs more than this, we scrap it and put in a new one. It's cheaper and better this way.

Once or twice we tried metalizing the crankshaft. In our experience, it was not satisfactory and not worth the hazard involved. We can still get crankshafts pretty much as we need them. However, prior to the war we used to get from 70,000 to 100,000 miles from them. Now we are getting around 50,000.

Low Speed Engines Favored

A few years ago most of our tractors had high-speed engines. This led to a good many habitual failures. Today, we have all low-speed engines. This, we believe, has led to a reduction in repairs. Our pre-war engines had a top speed of 4000 r.p.m.'s. Today, they have a top speed of 2800 r.p.m.'s. With the present day habit of drivers roaring the engine up to top speed before changing gears, it is not hard to see where the low-speed engine is saving us money and a lot of valuable maintenance time.

The two-piece valves of today are poor. They are too soft and the heads snap off occasionally. We have not used many of the two-piece valves since, so far, we have had access to the pre-war type. Altogether, Acme freights in 19 states and there are around 500 spots where we know we can pick up needed parts. We keep a check on current stocks in these spots and have found Indianapolis, Chicago and a few other centers very good. For a reserve, we have our drivers keep their eyes open for new spots. Once in a while, a driver turns

(TURN TO PAGE 74, PLEASE)

Studebaker salutes the Baking Industry

Delivery trucks in the baking industry carried 26.5% more tonnage last year than in 1941, yet traveled 463,246,954 fewer miles.

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YOU get some idea of the gasoline, tires and truck repair parts the baking industry has conserved during the war, when you read the figures recently released by the office of Defense Transportation.

According to Colonel J. Monroe Johnson, Director of the O.D.T., the delivery trucks of the baking indus-

try have been operating with 75 percent greater efficiency than in 1941, largely due to the industry's wholehearted compliance with our government's transportation conservation programs.

Surveys made by the American Bakers Association show that baking industry trucks traveled 1,715,729,460 miles during 1941 and 1,252,482,506 miles in 1943—saving 463,246,954 miles while doing more work since the tonnage delivered was 26.5% greater!

As a matter of fact, the decrease in mileage coupled with the increase in tonnage

indicates a 73 percent greater average poundage delivered per mile traveled.

Many thousands of free Studebaker booklets on motor truck care in use by bakers

As part of its continuing wartime programs for con-

serving truck transportation, Studebaker has made available to members of the baking industry many thousands of free copies of its handbook, "Wartime Information for the Delivery Truck Operator".

This comprehensive, 52-page, pocket size handbook for any type of delivery truck operation is obtainable free by asking for it at any Studebaker dealer's or by mailing the coupon below to Studebaker Truck Division, South Bend 27, Indiana.



MAIL THIS COUPON NOW!

This booklet won a National War Themes Awardget a copy and you'll understand why

STUDEBAKER

Gioneer and pacemaker in Automotive Progress

NOW BUILDING WRIGHT CYCLONE ENGINES
FOR THE BOEING FLYING FORTRESS—MULTIPLE-DRIVE
MILITARY TRUCKS—THE ARMY'S NEW M-29 WEASELS

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War-Born Troubles Curbed by War PM

(CONTINUED FROM PAGE 72) in a valuable tip. Also, we have found the ODT very cooperative in obtain-

ing parts for us.

The reclaimed rubber parts we use are giving us just about the same service as the natural pre-war rubber gave us, that is for rubber used in fan belts, radiator connection, etc. We have eliminated much potential part failure such as head gasket failure, bearing failure, valve covers, manifold bolts, etc., by exercising an elementary precaution any garage should exercise—through the use of tension wrenches according to the manufacturer's specifications. Every bolt has the prescribed number of foot-pounds pressure needed for correct setting. We set our rod bolts at 65 ft. lbs. pressure, our main bearings at 93, head bolts at 95. Ordinary guesswork and ordinary wrenches won't do. Such procedure only leads to unnecessary parts failure.

Our experience overall with wartime parts has been unsatisfactory. The steel radiator cores now made leads to increased overheating of engines. They don't disperse the heat fast enough and lead to valve trouble and ring freeze. The rubbers on the sleeves crumble up much faster. Clutch linings and brake linings are vastly inferior.

We have had a lot of trouble with clutch throw-out bearings. These bearings are supposed to be self-oiling but, in our experience, they start squealing in about 30 days. We have learned not to wait after this squealing starts. Immediately we tear down the transmissions and put in new bearings. This has become more or less of a routine job in our garage and we are now doing from two to three such jobs every week.

One factor that has reduced our maintenance costs and has helped to make our maintenance program function has been the fact that, with the exception of government bill-of-lading loads, we hold all loads down to 21,000 lbs. This load is just about right; when all component parts of our equipment, such as engines, tires, springs, running gear, etc., is con-

sidered.

Heavy Duty Vehicles Favored

The war has taught us one thing, that is that there is real economy in buying heavier equipment and heavier tractors. Our present 1½-ton

to 2-ton jobs are still too light for the work we are giving them. We have found that you can't pull freight loads with passenger car engines. A 3½-ton to 5-ton job will cost a good deal more but, in our experience, it will be worth the extra cost. Right now we are giving our 11/2 to 2-ton jobs a complete overhauling at 60,000 miles. But, even after this, we find that the best of the tractor engine is gone. No overhauling can ever restore it to full functional power. The heavier jobs will go 125,000 miles without an overhaul and, once they are overhauled, they are still good for many thousands of miles of additional service. In ordinary times when equipment was available it may be that the light jobs were all right but under prevailing conditions they are not the equipment one wants.

Despite the various troubles outlined, our fleet continues to roll on, thanks to PM. We have followed our preventive maintenance program as religiously as we could. It has been our one guarantee that our tractors go on the road when needed.

END

(Please resume your reading on P. 64)

Saving 2 Hours on Ford Camshaft Gear Replacement

(CONTINUED FROM PAGE 47) to the timing gear case. Then remove the cap screws holding the timing gear case cover to the oil pan. When removing the gear case cover, tilt the top of the cover forward to lessen the possibility of damaging the oil pan gasket.

Now turn the crankshaft until the timing marks on the two gears line up. The rim of the cam gear is marked with a straight line between two teeth. The crankshaft gear is marked with an "O" on the face of one tooth. These marks are shown at "1" and "2" in Fig. 1. After the marks are lined up, the gears should not be moved from their relative position until the new cam gear has been installed.

The cam gear has a steel bushing in the center. This is a press fit on the camshaft hub. Center punch this bushing and drill a 5/16 in. hole through the steel bushing opposite the timing marks, as shown at "3," Fig. 1. This bushing is very narrow and great care must be exercised when drilling the hole so as not to damage the surface of the hub of the camshaft. The depth of the bushing is only about % in. and the drill should not be allowed to go beyond this depth into the cylinder block.

With a drift that will just enter the 5/16 in. hole just drilled in the steel bushing, spread the bushing to loosen it on the camshaft hub. Now it may be possible to remove the gear from the shaft by pulling it off with the drift. If the gear still sticks on the hub it can be pried off with two screw drivers or other suitable tools. Care must be used when removing the gear not to rotate the camshaft.

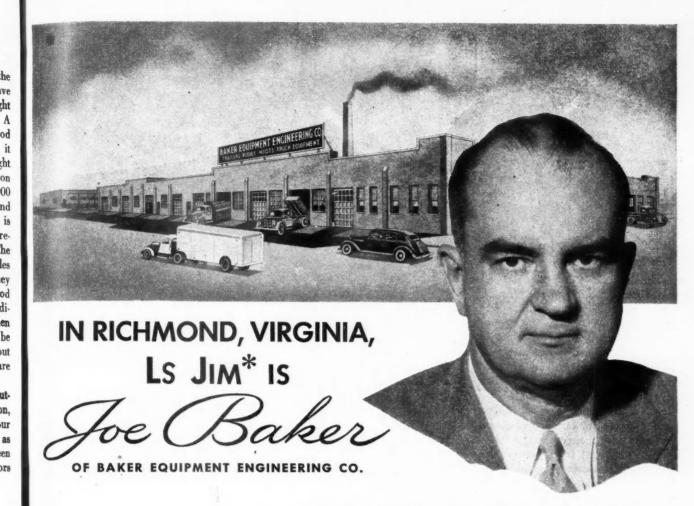
The steel bushing of the new cam gear has a locating mark on the face, which is a straight line. Using a machinist's square, continue this mark across the inner surface of the bushing with a scriber, as shown in Fig. 2.

Place the new gear on the end of the camshaft, aligning it with the marks on the shaft and on the gear. The timing marks on the cam gear and crankshaft also must be in line, as shown in Fig. 3. The gear must be started squarely on the shaft, otherwise the steel bushing may drag the metal of the shaft hub and the gear will run out of line.

Drive the gear on the shaft, using a flat plate that will cover the bushing. After the gear is in place, install the gear case cover using a new gasket. A good gasket compound should be used-around the oil pan to insure against leaks.

END

(Please resume your reading on P. 48)





DO YOU KNOW "JIM," your local Ls Dealer?

"Jim," your neighbor, was chosen for your local Ls body builder because of his ability to handle your requirements intelligently — whether you need one or a thousand truck bodies.

Knowing local conditions and regulations thoroughly, "Jim" styles your body to meet all your requirements. Unhampered by shipping problems, he gives you a factory job of repairs overnight.

There are 72 Ls dealers throughout the country

• Joseph B. Baker, Baker Equipment Engineering Company president, serves the Richmond, Va., area as its Ls dealer. Twenty-two years ago Joe Baker founded his business on the service idea of a large stock for immediate deliveries. Now his plant occupies over 65,000 ft.—with 80 skilled workmen.

Typical of Ls dealers throughout the country, Joe Baker represents the Ls system of offering the advantages of both mass production and personalized service. He styles your truck to your exact requirements. It will pay you to get acquainted with him and his competent staff.

Ls truck bodies, die-formed light-weight steel and aluminum with unique strength-weight ratio, mean low operating costs, increased pay loads, quick delivery and fast repairs any place in the country. If you operate a national fleet, any Ls dealer can build you identical Ls truck bodies for local branches.

Get in touch with us for the name of your local Ls dealer. Lindsay and Lindsay, Adams-Franklin Bldg., Chicago 6, Ill.; or 60 E. 42nd St., New York 17, N. Y. Lindsay Structure (Canada), Ltd., Dominion Square Bldg., Montreal.

LINDSAY

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STRUCTURE

U. S. Patents 2017629, 2263510, 226351
U. S. and Foreign Patents and Patents Pending

DISTRIBUTORS AND DEALERS THROUGHOUT THE COUNTRY

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30,000 More War Surplus Trucks Expected Soon

Thus far, more than 23,000 trucks have been declared to the Treasury Procurement Division for disposal as surplus war property, and 30,000 more are expected soon. Generally, trucks have been disposed of quickly after being inspected and listed for disposal. Dispositions have been large compared with recent acquisitions. These quick sales have been made largely to farmers who need trucks to save their crops.

Distribution of trucks geographically has been made according to information obtained from the ODT indicating those areas most critically in need of truck transportation. Sales have been made in such areas through hundreds of dealers. For example, in the Boston region, 850 trucks were distributed through 125 dealers; in the New York Region, 2,300 trucks went to more than 600 dealers, and in Texas, 2,041 trucks went to 500 dealers. An effort has been made to limit sales to not more than five trucks per dealer, although special circumstances sometimes have made it advisable to vary this. Sales thus far have averaged less than two trucks

Pease Made Assistant Director of Ford Sales

per dealer per month.

Alan B. Pease, for many years a Ford Motor Co. sales executive, has been named to the new post of assistant director of sales. In this capacity, he will assist Jack Davis, director of sales and advertising, in readying the Ford company's sales organization for post-war operations.

Mr. Pease has been with the Ford Motor Company thirty-three years, and has had a wide experience in sales, service and manufacturing departments. Over a period of twenty years Mr. Pease was manager of the company's branches at Buffalo, N. Y., Cleveland, Ohio, and Boston, Mass., and brings to his new position a wide experience in the automobile business.

Perkins International's Fleet and National Account Head

The appointment of W. K. Perkins as assistant manager of sales in charge of national account and fleet sales has just been announced by P. V. Moulder, general manager of the International Harvester Co.'s motor truck division.



Mr. Perkins' 20 years of International truck sales experience and his wide acquaintanceship in the automotive industry provides an excellent background for his new and important duties. Mr. Perkins joined the sales force of the company's Pittsburgh branch in 1925 and was transferred to wholesale sales at New York in 1929. In 1930 he became sales manager of the West Philadelphia branch and in 1933 was transferred

to Philadelphia as assistant branch manager becoming manager of that branch in 1935. In 1939 he was appointed assistant manager, eastern district, and the following year was transferred to the southern district in the same capacity. He was appointed manager of that district in December, 1940, in which capacity he served until his present appointment.

In addition to his district duties Mr. Perkins has served in various important capacities during the war period in the production of military vehicles and other war products at the Chicago office and at the company's Fort Wayne, Indiana, motor truck works.

Weatherhead Chicago Office

The opening of a direct Chicago sales office on Sept. 1, to be located in the Pure Oil Building, Wacker Drive and Wabash Avenue, is an-

(TURN TO PAGE 78, PLEASE)





Robert P. Gibson, left, vice-president in charge of automotive sales, and George H. Hufferd, right, vice-president in charge of engineering of The weatherhead Co., Cleveland. They are two of the three executives elevated to vice-presidencies. The third is H. Church, vice-president in charge of sales. Morris W. Wright is the new assistant to the president



E. L. Mefford, left, has succeeded D. W. Sanford, right, as Western Division sales manager of the Goodyear Tire & Rubber Co. of California. Mr. Sanford succeeds J. E. Mayl as resident vice-president in Los Angeles. Mr. Mayl has returned to Akron as head of the tire sales division. George M. Reveire, who has been in charge of the Goodyear export office in Washington succeeds Mr. Mefford as vice-president's assistant in charge of the company's Washington offices



MIDLAND Air Compressors on Amphibious "Ducks"

The Army 2½ ton 6x6 Amphibious Truck—the famous "Duck"—has been in every invasion in the Pacific and in Europe. These trucks that travel both land and water caused enemy eyes to bulge with surprise as they plowed ashore—and kept on coming.

These Army "Ducks" are equipped with Midland 9½ cubic foot air compressors for inflating the tires after the vehicle has passed over the soft sandy beaches and reached firm terrain—a spot where equipment must be dependable.

This is the same type air compressor that is the heart of every Midland Air Brake installation—furnishing power for positive braking under all conditions.

All over the world—on Army "Ducks"—on trucks operating over the toughest routes—Midland Air Equipment has proved its dependability—proved its advanced design, thorough engineering and sturdy construction.

THE MIDLAND STEEL PRODUCTS CO.

10605 MADISON AVENUE, CLEVELAND 1, OHIO Export Department: 38 Pearl Street, New York City



MIDLAND AIR EQUIPMENT

COMPRESSORS . POWER BRAKES . CONTROLS

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CCJ NEWSCAST

(CONTINUED FROM PAGE 76)

nounced by H. Church, vice-president in charge of sales of the Weatherhead Co., Cleveland.

The new office will more conveniently serve the midwest territory, and will be headed by Charles T. Craig, formerly director of purchases for the company, working with Robert A. Lennox and C. V. Landwerlen, Weatherhead sales engineers.

Eisenhower Needs Trucks and Tires

Emphasizing the tremendous consumption of war materials in the French campaign, General Dwight D. Eisenhower has cabled Lieutenant General Brehon Somervell, Commanding General, Army Service Forces, a forecast which made the following mention of trucks and tires:

"In the important item of heavy duty trucks our needs increase every Each advance means more day. trucks for assuring supply. Yet this campaign must expand both in strength and in speed of movement in order to bring about a rapid victory and take advantage of the opportunities we have already gained. We must have trucks of all kinds and sizes.

"As a special item I must include tires, particularly heavy duty tires for big trucks and airplanes. Our need in tires is acute.

"I must urge that you keep flowing across the Atlantic at maximum rate all those things, including spare parts, that a modern army and air force require in battle."

Fuel Injection May Give Diesel a Two-Cycle Rival

Possibility of the not-so-distant future development of a fuel-injection two-cycle engine rivaling the diesel in power and economy, and satisfactory for tractor use, was suggested at the SAE National Tractor Meeting in Milwaukee.

Fuel injection, according to H. O. Hill, of American Bosch Corp., Springfield, Mass., may restore the two-stroke-cycle engine to favor by correcting its wastefulness of fuel, relative inefficiency at fractional loads and speeds, and poor idling qualities.

"It appears that an entirely new

1944 Monthly Production of Trucks and Truck Tractors*

	Under	LIGHT 9000 lb. GV	w.						
1944	Civilian	Military	Total						
January		21,479	21.479						
February		21,095	21,095						
March		21,081	21,081						
April		19,481	19,481						
May		19,338	19,338						
lune		20,830	20,830						
luly		20,269	20,269						
Total-7 Months	*****	143,573	143,573						
	9000 to	MEDIUM 15,999 lb. 0	ivw.						
	Civilian	Military	Total						
lanuary	1.985	12.812	14.797						
February	1,798	9,940	11,738						
Viarch	3,317	8,404	11,721						
April	6.245	6.542	12.787						
Vlay	7,310	7.012	14.322						
lune	9,319	6.620	15.939						
uly	8,600	6,031	14,631						
Total7 Months	38.574	57,361	95,935						
	HEAVY 16,000 lb. and over GVW.								
	Civitian	Military	Total						
lanuary	543	21.784	22,327						
ebruary	967	21,867	22,834						
March	1.311	22,362	23.673						
April	1.903	21.441	23.344						
May	1.988	21,299	23,287						
lune	2.592	21.816	24,408						
luly	2,682	24,005	26,667						
Total-7 Months.	11,966	166,540							
	TOTAL	-ALL WEI	GHTS						
	Civilian	Military	Total						
January	2,528	56,075	58,603						
February	2,765	52,902	55,667						
March		51,847	56,475						
April		47,464	55,612						
May		47,649	56,947						
June	11,911	49.266	61.177						
July	11,262	50,305	61,587						
Total—7 Months	50,540	355.508	406.048						

-Automotive Division-W.P.B.

field is opened up by gasoline injection for the two-stroke-cycle engine," he explained. "The economies which are inherent in the construction of engines operating on the two-strokecycle might do more than offset the cost differential between gasoline injection equipment and the carburetor."

Mr. Hill added that four-cycle engines, if designed for the purpose, also might benefit from the inherent advantages of fuel injection, among which he listed fuel economy, higher power output, increase in volumetric efficiency at speed, better low-speed torque characteristics, excellent coldstarting qualities, and proper functioning on low-grade fuels. Gasoline injection equipment can be applied to carburetor-equipped engines, he said, with some, if not full, advan-

Mr. Hill warned that fuel injection systems have certain disadvantages, such as higher cost, deterioration in storage, extreme sensitivity to foreign matter in fuel, and, in the case of tractors, higher costs resulting from necessity for using gasoline.

Motor Truck and Truck Tractor Production -1936-1943*

	Under	LIGHT 9000 lb. G.V	/.w.
1936. 1937. 1938. 1939. 1940. 1941. 1942. 1943.	Civilian 317, 189 396, 326 208, 575 306, 098 337, 983 367, 467 23, 427	Military 1,004 368 690 1,651 13,365 72,164 277,413 268,438	Total 318, 193 396, 694 209, 265 367, 749 351, 348 439, 631 300, 840 268, 438
	9000 to	MEDIUM 15,999 lb. G	.v.w.
1936. 1937. 1938. 1939. 1940. 1941. 1942.	Civilian 417,395 437,525 248,886 343,190 323,088 408,367 86,072 179	Military 1,125 1,266 1,119 2,900 36,042 128,170 169,188 154,808	Total 418,520 438,791 250,005 346,090 359,130 538,537 255,260 154,987
	16,000 (HEAVY b. and over	G.V.W.
1936 1937 1938 1939 1940 1941 1942 1943	36,008 39,030 47,371 15,795	Military 596 69 439 1,637 5,982 18,323 225,032 249,368	Total 36,641 38,338 21,285 37,645 45,012 65,694 240,827 252,077
	TOTA	L-ALL WI	EIGHTS
1936 1937 1938 1939 1940 1941 1942	872,118 478,307 685,296 700,101 823,205 125,294	Military 2,725 1,703 2,248 6,188 55,389 218,657 671,633 672,614	Total 773,354 873,821 480,555 691,484 755,490 1,041,862 796,927 675,502

July Revenues & Expenses of For-Hire Motor Carriers

Expenses of motor carriers of property in July amounted to 99.8 cents for each dollar of gross revenue, according to data compiled by the Research Department of American Trucking Associations, Inc.

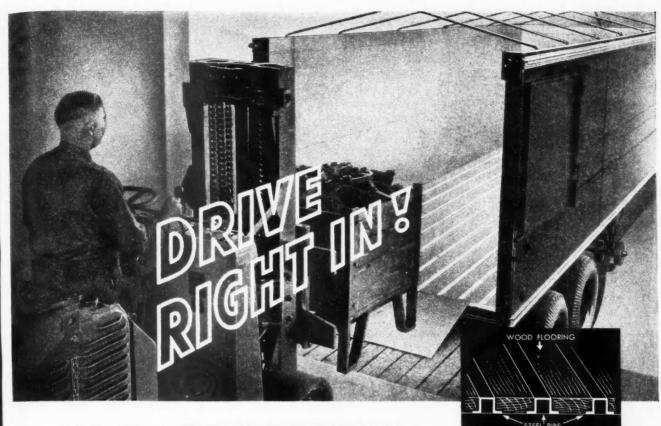
Based on reports from 232 motor carriers in 45 states and the District of Columbia, the study showed July revenues decreased 5.3 per cent below June and expenses decreased 1.2 per cent.

July revenues represented an increase of 0.5 per cent above July, 1943, while expenses were 4.5 per cent higher than in July of last year.

As compared with the operating ratio of 99.8 in July, the same carriers reported operating ratios of 95.7 for June and of 96.0 for July,

Of the 232 reporting carriers, 101 whose revenues amounted to about 44 per cent of the total, suffered operating losses. Eighty-one of them showed operating deficits for June,

(TURN TO PAGE 182, PLEASE)



... IT HAS THE NEW FRUEHAUF STEEL A RIBBED FLOOR

THE NEW Fruehauf STEEL RIBBED floor in freight vans is built to take abuse—for extra strength has been added where it's needed most.

This new floor, a patented Fruehauf feature, is capable of withstanding a concentrated load of 1000 pounds per square foot—some 2½ times more than a conventional all-wood floor of the same thickness. It is a radical departure from the old-fashioned "tongue and groove" construction.

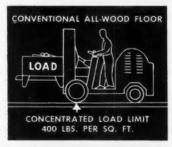
High-tensile steel ribs running substantially the full length of the Trailer are welded to all chassis cross-members and form an integral part of the frame. The flanges of the ribs support the floor boards, and the ribs themselves are flush with the top of the floor . . . giving a smooth, long-wearing surface.

Hardwood floor boards are bolted down between the rugged steel sections, and each floor board is backed up by metal throughout its entire length. Thus, expansion or contraction of boards will not open up cracks in the floor. And this weather-stripping reinforcement also serves to eliminate the "buckling" which frequently develops in floors of conventional design.

Besides greatly increased floor strength and frame rigidity... with longer floor life... servicing is no longer a "headache." With the new construction, any board can be replaced without disturbing the rest of the floor since there are no "tongues" or "grooves" to worry about and matched lumber is not required.



END VIEW SHOWING CROSS SEC-





FRUEHAUF TRAILER COMPANY

WORLD'S LARGEST BUILDERS OF TRUCK-TRAILERS

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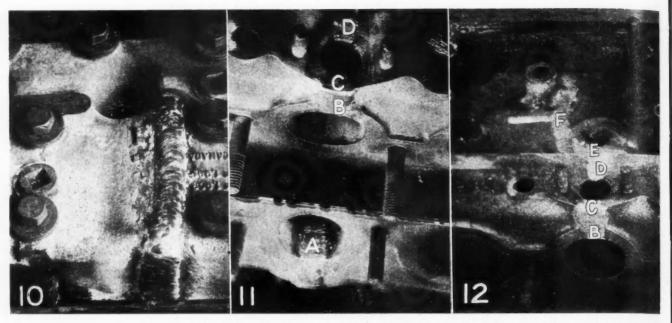
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Bronze welding is ideal for repairing cracked cylinder heads because the low temperature does not induce warping. Repair in Fig. 10 was made without chipping crack, but job in Figs. 11 and 12 required preparation. Article gives full procedure

CYLINDER HEAD AND **ENGINE BLOCK REPAIRS**

(CONTINUED FROM PAGE 65) ability to throttle down each individual tip's output of heat, plus the use of welding rods with diameters as small as a 1/16 in., and the low temperature, surface heat method makes possible the repair of many castings with the variation of thickness as mentioned above.

Using a No. 2 or No. 3 welding tip and either a 3/32 in. or 1/8 in. bronze rod, depending on the heat required on the thick section, the weld can be made in a continuous operation, or we can stop, as was done when photograph reproduced at Fig. 1 was made, and start the weld at either end, or in the middle, and finish it.

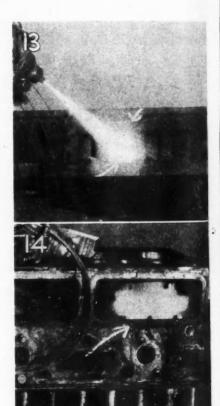
The complete procedure consists of steel grit blasting for a clean surface, using the smallest tip that will give just enough heat for the thickness being worked on, a small diameter rod, no chipping, and a weld not of 3/32 in. high and not over a 1/4 in. each side of the crack.

We only require enough bronze to seal off the crack. Should it be necessary for some reason to remove the bronze, a flat chisel and a hammer, starting at either end, will peel off the bronze without doing any damage to the area (other than pulling off small, pepper-like particles of the cast iron surface), after which the weld can be made over again.

Fig. 2 shows the completed weld. The block is rigged with dummy gaskets and plates, and it is being tested with water under air pressure.

After two years in service, another freeze-up, and it is back again, as shown in Fig. 3. Note that the first weld apparently reinforced the area of the first break, and transferred the strain of the freezing ice, in the water jacket, to its next point of least resistance.

Repeating the original steel grit blasting, and the bronze welding of this new crack, we run into difficulties. Parts of this wall are very thin, so we use a No. 1 tip and 3/32 in. rod, but we still have numerous small cracks. Upon completing the weld, Fig. 4, a sulphur graphite stick was used to seal the job for the pressure test, after which the block was returned to service.



While unorthodox, author explains how fine cracks are filled by metal spray

Having the job on the bench so that the welder can make a down hand weld, or have the job under the torch flame, makes possible a repair that will stand up. Doing the job in the chassis, with the welder doing (TURN TO PAGE 82, PLEASE)

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CORR. 1944 MACK MFG. CORP.

SOMETHING YOU CAN'T CAMOUFLAGE ...

Our army can paint a Mack or any other truck to hide it from enemy eyes. But nothing about a truck can be camouflaged from its driver. That fact sent thousands of men home from the front after World War I to become Mack boosters. And this time Macks are even better! . . . Returning service men will know what you mean when you use the words "built like a Mack" to describe something tough and dependable.



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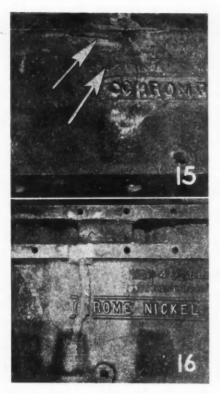
Mack Trucks, Inc., Empire State Bldg., New York City. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts.



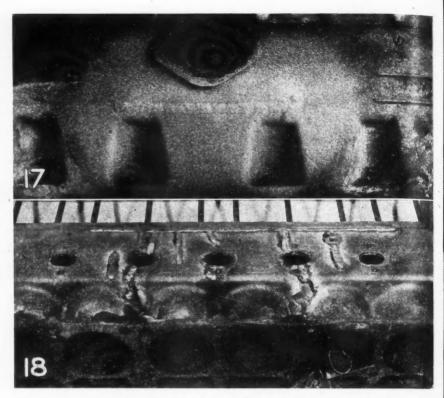
IF YOU'VE GOT A MACK, YOU'RE LUCKY ... IF YOU PLAN TO GET ONE, YOU'RE WISE!

OCTOBER, 1944

Use postage-paid card inserted in this issue for free information on advertised products



Metal spray repaired block shown in Fig. 15. Routine overhaul caused its failure. Fig. 16. Here both methods were employed



Cracked block shown in Fig. 17 also was repaired by the combination of welding and metal spraying. Photograph shows block during pressure test, which proved repair to be successful. Fig. 18. Another example of the same type of repair

CYLINDER HEAD AND ENGINE BLOCK REPAIRS

(CONTINUED FROM PAGE 80) acrobatics or imitating a contortionist to get at the weld area, may or may not be successful.

Cracks in any direction, long or short, patches in water jackets, large or small, are made with the same procedure.

A most unusual job is the six-cylinder engine block shown in Fig. 5, which during the reboring job uncovered a hole in No. 1 and No. 6 cylinders at a point opposite the stud bolt base on the outside of the block, at which spot the cover plate of the valve push rod chamber is fastened. The hole could have been plugged with solder. But after punching away the thin wall around the hole, and using a 1/16 in. rod and a No. 1 tip on the torch, bronze, which we knew would hang on, was used. The machining of the small amount of excess bronze took little time.

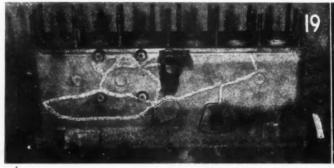
A badly broken two-cylinder, two-cycle engine block is shown in Fig. 6.

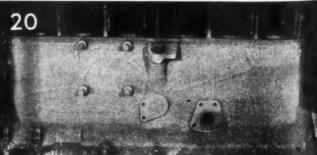
The preparation consisted of steel grit blasting, inside and out. Broken segments were bolted to the lower case, the bolts inserted into the cracked bolt holes to keep all parts in their proper position.

Tack welds were made around the inner circumference of the bearing opening, to assist in maintaining alignment. Then, without preheating, the outside and inside welds were made up to the broken stud bolt holes.

(TURN TO PAGE 84, PLEASE)

Standard welding procedure would have induced so much warping in this block that it would have been unfit for service This is the same block as in Fig. 19. After being bronze welded, block was sprayed to seal leaks and improve appearance





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Adaptable

to any need for remote control

TRU-LAY PUSH-PULL CONTROLS are being used in so many and such varied ways that it would be impossible to list their applications. If you have a problem involving remote control, the only question is which particular size and type of TRU-LAY PUSH-PULL will serve you best.

3 SIZES

Standard Tru-Lay Push-Pull controls are made in any length. The armored strand that forms the operating member is made in a selection of three sizes: 1/8, 1/4, and 1/4 inch.

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Regular Tru-Lay Push-Pull controls are standard with 1, 2, 3, and 4 inch movement. (Movement of more than 4 inches on special order.) Micro Push-Pull has 3½ inch movement only.

TYPES

Regular Push-Pull allows for manual adjustment anywhere between the "on" and "off" position. Micro Push-Pull permits micro adjustment, either forward or back, from any point in the range of the control. Fixed Position Push-Pull allows quick, exact adjustment to two or more fixed positions.

WORK FITTINGS

The fitting on the work end may be either rigid or with an 8-degree swivel joint designed to follow the arc of a lever or other such device.

Write us for specific information about TRU-LAY PUSH-PULL CONTROLS.

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AUTOMOTIVE CONTROLS

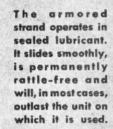
AUTOMOTIVE AND AIRCRAFT DIVISION

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AMERICAN CHAIN & CABLE COMPANY, Inc., BRIDGEPORT, CONNECTICUT

In Business for Your Safety

Also Manufacturers of TRU-STOP Emergency BRAKES

—with ventilated discs that dissipate the heat of braking





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CYLINDER HEAD AND ENGINE BLOCK REPAIR

(CONTINUED FROM PAGE 82)

Then bolts were removed, the previously made tack welds melted away, including the threaded broken holes, providing solid bronze for the machinist to drill and tap into. The two bottom welds were made after the lower case was removed. No building up on the surface of the circumference of the bearing hole was required.

In Figs. 7, 8 and 9 we have examples of bronze, the "cure-all" on cast iron, at its best: Alignment, strength, easy machining, as well as a minimum of machine work. Non-preheated, therefore no warping of the bore—a miracle metal without competition when properly applied on cast iron. The blackened area shows the extent of the spread of the heat.

Cylinder heads, flat and long, or long, square and bulky, provide good examples of the possibilities of low temperature, surface heat bronze welding of cast iron.

The first type, Fig. 10, upon examination and the use of the straight edge on its under machined surface before any welding is done, usually shows an upward warping, directly under the top surface crack, of from .004 to .007. This is worth attention before any welding is done, as the welder usually is the one who warped the head, after he is through with it, regardless of what method of welding is used.

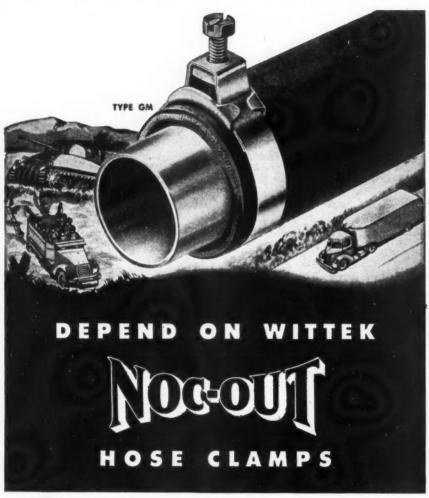
Without chipping the surface, a bronze weld, ¾ in. wide and ⅓ in. high, is made. Then, if the under surface is planed and the stud bolt nuts are pulled down properly, and if the stud bolts do not stretch, the head will stand up until it breaks—either through the weld, alongside or in another area. The cold or unpreheated bronze weld will not remove or add to the already warped under surface of the head.

The second type, the long square and bulky head, usually is tested with water, under pressure, to show up the cracks. Then it is stripped of the valve guides, stud bolts, valves and springs for the preheating. After welding we wait overnight for it to cool, test again for tightness and, if we are lucky in not developing a new cracked port in some other spot while in the fire, it goes to the machine shop. If we are unlucky, it goes back in the fire and we have another overnight wait.

Fig. 11 shows this type of head welded on the bench with bronze. Unpreheated, we first remove all springs, valves and any valve guide in the path of the crack. Next, we steel grit blast and, beginning at the inside of the port marked A, which is reflected by a mirror, and using a No. 1 tip and a 3/32 in. rod, we make the first weld up to the thick section at point B. The surfaces at points B, C, and D have been shallowed out with a round nose chisel so that the weld will be under these spots when resurfaced.

Fig. 12 shows a larger area of the same head. Spots B, C, D, and E are usually done with a No. 1 tip, or No. 2. Spot F requires a change of tips, sometimes using a double nought, No. 00, for this surface is paper thin at places, which means a reduction in the amount of heat as well

(TURN TO PAGE 87, PLEASE)





Type A — Adjustable For Replacement.

The standard of the industry. Quicktightening, perfect leak-proof hose connections, for original equipment and replacement. For Radiator, Heater, Booster Brakes and High Pressure hose connections. Wittek Manufacturing Co., 4305-15 W. 24th Place, Chicago, Ill.



Type HP—For High Pressure Requirements.

WITTEK NOC-OUT HOSE CLAMPS



G.I. breakfasts come "sunny-side up" ... with DIAMOND T reliability

As every enlisted man knows, "G. I. breakfast" means eggs whenever possible—and the Casperson fleet of Diamond T's has sped the collection and transport of countless millions of them for our fighters at the Pacific front.

There are ten of these Diamond T's in the service of O. A. Casperson and Sons, and they have no easy job. Most of their mileage is made on secondary country roads and up and down San Francisco's famous "cable-car" hills...there are many stops and starts with heavy trailer loads.

Mr. Casperson writes "We have standardized on Diamond T. In our hard service they give us the dependable performance we must have, with economy of operation. We are looking forward to the day when Victory comes and new trucks are again available, so that we can have more Diamond T's in our fleet."

Diamond T has been authorized to build a limited number of new commercial trucks this year. See your Diamond T dealer if your service qualifies for Rationing Board approval.

DIAMOND T MOTOR CAR CO. CHICAGO

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DIAMOND T TRUCKS



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ALUMINUM ALLOY PISTONS SEMI-STEEL PISTONS PISTON PINS

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WATER PUMPS
WATER PUMP
REPAIR KITS
WATER PUMP PARTS

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CYLINDER HEAD AND ENGINE BLOCK REPAIR

(CONTINUED FROM PAGE 84)

as a smaller size, 1/16 in. bronze rod. Testing under pressure may reveal some minor cracks or pin holes. These are plugged with the sulphur graphite stick, or a liquid seal put in hot and forced through the leaks with air pressure. A light coating of sprayed metal will give us a new wall and more service, with less waiting and a faster return to the top of a block.

It is a question whether or not the job is worth while at all, except under present emergency conditions. But the purpose of this article is not so much to show how to save this head, as it is to show how the low temperature, surface heat method can be used to advantage on a casting having both thick and thin walls.

The metal spray gun is a most valuable and welcome tool in the welding repair shop. However, one of its not recommended uses is shown in Fig. 13—spraying a new 1/16 in. wall of low carbon steel wire over a porous area which developed after preheating and welding the head. Cracks are easily followed by the welder when a job is red hot, for it is outlined as if marked with a pencil. Porous area, however, may or may not be found. The spray gun, on the other hand, covers the whole area quickly and without additional preheating.

Before overhauling or welding engine blocks and heads are always pressure tested before being worked on. The engine block in Fig. 14 also showed a porous area. A few minutes of steel grit blasting, and a few minutes of the spray gun, speedily fixed this condition.

The use of the spray gun is not recommended for the purpose shown in Figs. 13 and 14, based on the belief that the sprayed metal, an adhesion (by no stretch of the imagination can it be called a weld) has little or no strength. I am not going to contradict that statement. But, evidently it has a lot more strength than is known, even though it is only a nonporous plaster, or adhesion, of fine particles of metal.

The engine block shown in Fig. 15 had been sprayed, while in the chassis, to seal a crack caused by a winter

freeze-up. How long it was in service after the sprayed job we do not know. However, it was due for an overhaul, which means it was given a pressure test, water and air.

No leaks were found, and the fact that the job had been sprayed had not been noticed. The pressure was stepped up and still no leaks were found. But, suddenly, the crack shown let go with a noise loud enough to be heard all over the shop. As the water was being sprayed, no attention was paid to the amount of pressure at which the sprayed metal repair let go. The blurred appearance of the word "chrome" is caused by what was left of the original sprayed metal. Parts of this metal, in shell-like form, are shown by the arrows after they had been lifted off by inserting a flat chisel beneath the broken edges.

The original crack was fully exposed by grit blasting most of the sprayed metal away, sharpening up the previous blurred area. It was re-

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CYLINDER HEAD AND ENGINE BLOCK REPAIR

(CONTINUED FROM PAGE 87)

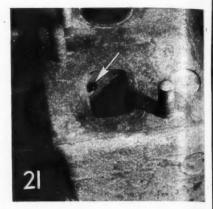
paired by the combination method of low temperature, surface heat bronze welding, after which the entire surface was metal sprayed.

The same procedure was employed in repairing the block shown in Fig. 17. The photograph shows the block as it was undergoing the pressure test, which proved the repair to be successful.

Engine blocks broken as badly as the one in Fig. 18 may come out useless if done in the fire. By bronze welding, even though we go quite close to the outside wail of the cylinders, we obtain strength. By metal spraying, we obtain a water-tight job and an improved appearance.

Any attempt to weld the engine block in Fig. 19 in the fire will result in the camshaft and mainshaft bearings being out of line. The finished bronze weld is shown after steel grit blasting for the application of the spray gun. Its improved appearance in the finished job, shown in Fig. 20, speaks for itself.

Another unusual job is shown in Fig. 21. This engine block was salvaged by the use of bronze to fill





the hole and the spray gun to seal it, which also made the surrounding area thicker.

For the past 10 years, the most valuable application of metal spraying has been to make temporary repairs to cracked water jackets on engine blocks in place in the chassis. These so called temporary repairs have stood up from nine months to two years, and longer. The writer ceased keeping records after the first one had stayed in service after the second year.

The procedure for making a repair to a cracked water jacket on an engine without removing it from the chassis is as follows:

All parts in the way of the spray gun or the area to be sprayed are removed. All openings that would admit either steel grit or sprayed metal, such as the water port opening shown in Fig. 23, are closed, either with plates of tin or cardboard. Using a large piece of old canvas, all

(TURN TO PAGE 90, PLEASE)



In War and Industry at War, every truck is taking a beating these days. The truck operators' pledge to make that extra trip is not only praiseworthy; it is producing results. But what a load it throws onto the maintenance men.

For steady, reliable and economical carbureter performance, look into the facts about Marvel-Schebler Carbureters for replacement equipment on trucks and cars.

MARVEL-SCHEBLER CARBURETER DIV.

BORG-WARNER CORP.
FLINT 2, MICHIGAN

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OCTOBER, 1944

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Use postage-paid card inserted in this issue for free information on advertised products

CYLINDER HEAD AND ENGINE BLOCK REPAIR

(CONTINUED FROM PAGE 88)

other parts are screened to protect them from the steel grit.

The face and hands of the man doing the steel grit blasting also must be protected from the flying particles of grit. The whole operation should be done in a location, with plenty of ventilation and away from other workers, especially when the job is



being grit blasted. Steel grit shot out of the blasting nozzle, with a pressure of 90 lb. of compressed air behind it, can do plenty of injury to the eyes or perhaps just eye glasses.

The gun is adjusted to shoot a fine spray of metal over the entire area surrounding the crack. The gun is held about 6 in. from the block. The spraying is done a little at a time. Each time the block becomes quite warm, stop and allow it to return to almost room temperature. This job cannot be hurried. I repeat, this job cannot be hurried; it requires time to do the job right. Allowing the surface to which the metal is being sprayed to become too hot interferes with the setting of the small particles of sprayed metal. After applying a coating of about 1/16 in. of sprayed metal, water is put into the radiator, previously drained. If the area continues to sweat, a few more passes with the spray gun will do the trick. If this additional metal spraying is found necessary, the radiator need not be drained again, as the water will help seal the sweat by an inside rust joint.

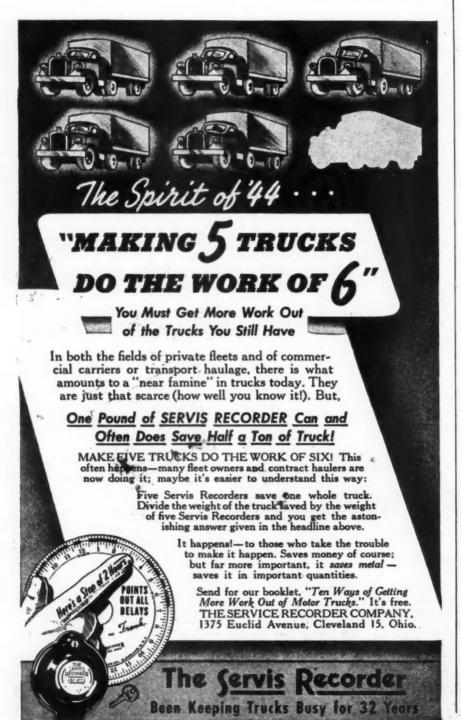
This job took between two and three hours to spray, under the procedure outlined. With the temporary repair, so called, this engine remained in service for 18 months, after which no further record was kept.

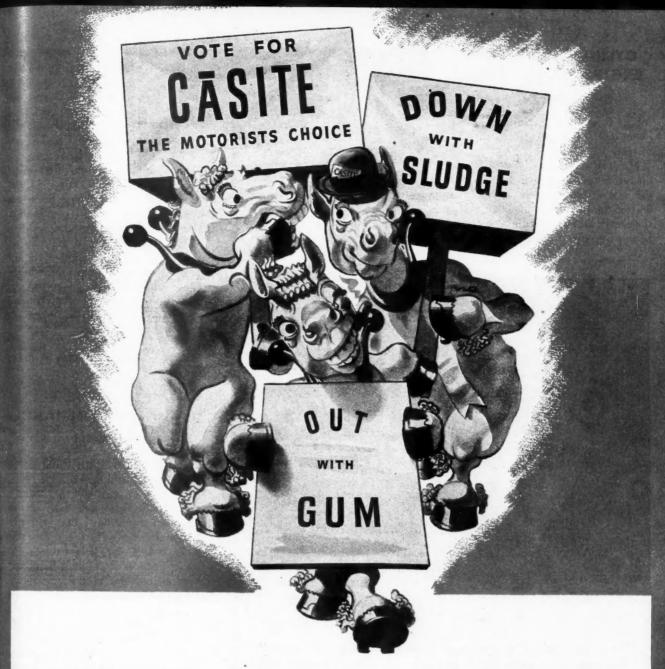
Steel grit when first used has sharp, angular points that roughen the surface as well as clean it. Like any cutting tool, whether file, chisel or hack saw, it will become dull with constant use. There is no way that the grit can be sharpened, except by adding new grit from time to time. Keeping a sample of the new unused grit in a small container, and examining both the used and new grit under a magnifying glass will quickly show the user when to discard the grit being used, especially when the surface has been grit blasted and still it appears smooth instead of slightly pitted and rough.

Failure to renew the grit as often as it loses its cutting property will result in the failure of the spraying operation. A rough, pitted surface is necessary for proper adhesion of the metal particles.

While, to my knowledge, there does not exist any special grit blasting tool for this particular job, it may prove worth while to make a small portable steel grit blasting container. One about the size of a plumber's blow torch, into which a small quantity of fresh steel grit (unused before) could be placed just for each engine block

(TURN TO PAGE 92, PLEASE)





 Running on a platform of economy and proven performance, Casite is the outstanding favorite.

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A clean engine runs better and lasts longer. Casite is keeping thousands of truck engines clean and free-running.

Casite also improves lubrication in two ways: First, it cleans out the oil passages;

second, it carries the oil to close-tolerance places.

Use Casite and results will speak for themselves: fast winter starts, restored motor efficiency.

Cut operating costs . . . use Casite and keep your fleet on the road during the frosty days ahead.

THE CASITE CORPORATION . HASTINGS, MICHIGAN

CASITE CLEANS OUT MOTORS



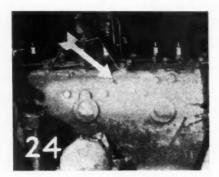
IT'S A PRIVILEGE TO BUY WAR BONDS

CYLINDER HEAD AND ENGINE BLOCK REPAIR

(CONTINUED FROM PAGE 90)

job as it arrives, providing the fleet operator has enough of this work to warrant its use.

Much of the steel grit is lost in an operation such as described here, also the grit is quite expensive, but the cost of the lost grit is made up many times over and over by the speedy return to service of the piece of equip-



ment held up by a cracked water jacket.

Fig. 24 shows another engine block similarly repaired. Since the job was completed, the engine, which is hooked up with the generator of our electric welding equipment, has been in service for more than a year. And the repair was supposed to be only temporary.

The purchase of our first metal spray gun, back in 1934 or 1935, was for the particular purpose for which it was not, or is not, recommended. The writer, along with other welders, played only the part of the man behind the gun. Credit for the idea and its development belongs to another.

Its value, however, for the purposes shown here will amply reward the user if close attention is given to its proper use.

END

(Please resume your reading on P. 66)

TIPS ON DIESEL ENGINE MAINTENANCE

(CONTINUED FROM PAGE 61)

minutes, as the motor is being assembled and if found a change is necessary it is made then and there.

Factory recommendations are on the latest cam shaft, that injectors shall start to travel on the injection stroke at 49½ deg. before top center.

Inasmuch as it is difficult to read the dial indicator at the exact starting point we do all our setting from 30 deg. before top center.

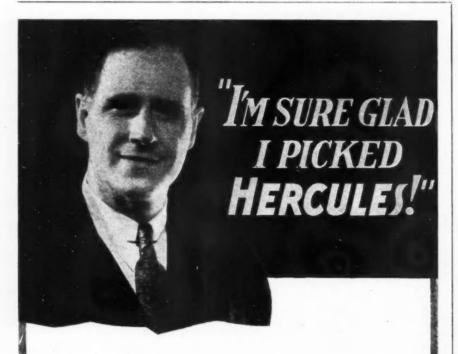
At this point the cam must have traveled not less than .019 and not more than .021 on discharge stroke. A tolerance of .002 here is permissible as it will change the timing less than 1 deg. actual about .66 of 1 deg.

As the cam shaft usually breaks down on one injector cam lift first it is possible to reuse the old shaft with good results if the timing is set up properly on this worn cam. This can be accomplished by adjusting with special length arms on lower rocker assembly.

Naturally when this is done it takes more time, but it pays out in these times of shortages.

Before using an old shaft it is suggested that the portion of cam on each side of roller that is not worn be ground off as it may cause trouble in that new rocker roller might hang on this unworn portion of cam and give a false reading.

(Turn to Page 95, Please)



"My fleet of Hercules Dumps has had a real workout the past few years, but every job has come through with colors flying.

It's really surprising how seldom Hercules bodies need service or repairs, and when they do, my Hercules distributor is right on the job.

My drivers like Hercules Hydraulic Hoists because of their ample reserve power, their dependability, and their "button-ease" dash controls, with no levers in the cab.

That Hercules slogan, "Men like to say they use them", certainly applies to me!"

Write us, or see the nearest Hercules Distributor regarding the Dump Bodies or Hoists you need now.

HERCULES STEEL PRODUCTS COMPANY
GALION, OHIO



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Soft pressure does it..



. . in every cylinder condition

Steel-Vent is different—because it employs the soft pressure principle.

Millions of Steel-Vent installations have confirmed the basic soundness of the soft pressure principle in every cylinder condition.

Soft pressure stops oil-pumping and checks

cylinder wear—in rebores and resleeves as well as in extreme tapers.

Soft Pressure does it - in Rebores, too

A large bus operator says this about Steel-Vents: "During the past four years we have been using them in our rebore jobs. We are getting longer life out of these rebore jobs than ever before, and the cylinder wall wear has been less at all times."

HASTINGS MANUFACTURING COMPANY . HASTINGS, MICHIGAN

Hastings Mfg. of Canada "Ltd., Toronto

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HASTINGS STEEL-VENT
PISTON RINGS

U. S. PAT 2,148,99

TOUGH ON OIL-PUMPING GENTLE ON CYLINDER WALLS

TIPS ON DIESEL **ENGINE MAINTENANCE**

(CONTINUED FROM PAGE 92)

Air Compression

The air compressor that is standard equipment on the engine is lubricated from the same oil as the engine. Naturally this oil is dirty, which fact decreases the life of compressor many thousand miles. There is a compressor built by Westinghouse that will interchange with this, that is a selflubricated unit, the life of this latter being about 300,000 miles as against 100,000 for the former. Needless to say we change over to the self-lube unit at our earliest convenience. The engine oil lube unit has another disadvantage in that any oil that may pass by the rings being of a very dirty nature, tends to gum up all the air valves and regulators in the entire air system.

This compressor after being in service for some time often starts to pump oil in large amounts and the natural assumption is, the piston rings are worn or plugged. Quite often this is not the case but the real cause of the pumping of oil is from a flooding condition of the crank case. This flooding is caused by the oil seal on the front of the unit through which oil is led into the crank shaft being

worn or burned out.

When this condition is encountered it is suggested these parts be checked. Parts can be identified by Westinghouse number 203423 seal and 203-422 bearing spacer.

I can highly recommend that the self lube unit be used and none of the trouble I have mentioned will be

encountered.

Bearings

Next I should like to take up bearings. We have used cadmium silver, trimetal, and copper lead in the connecting rods. We find that the cadmium silver will not last in the supercharged engine, but it will do a good job on the conventional engine, if you do not go beyond .040 under standard. If you do go beyond this point I suggest you check the rod bearings at 20,000-mile intervals.

We find the tri-metal to be a fair bearing but it is tricky. By that I mean one set may do a fine job while the next one may not do so well. What seems to take place is the small amount of babbitt they are lined with will in some cases wipe off and it will not loosen the rod enough to be heard. The rod will then ride along with the brass lining of the bearing on the crankshaft for a time, until it scores the crankshaft journal, then the entire bearing fails with most disastrous results.

We are using copper lead rod bearings 100 per cent in all supercharged engines at present, and are slowly changing over to them in the conventional engines. It is my observation that a greater amount of crankshaft wear takes place with copper lead bearings but the advantages outweigh the disadvantages of the wear. Our average life of a crankshaft is approximately 200,000 miles before regrinding and we do not use a shaft that is more than .005 out of round on crankshaft throws.

So far in all our replacements of main bearings we are using babbitt rather than copper lead as they are

(TURN TO NEXT PAGE, PLEASE)





TRY THIS ON ANY PRE-WAR COATED UPHOLSTERY FABRIC...THEN TEST MODERN, FLAMEPROOF

"U.S." NAUGAHYDE

REG. U. S. PAT. OFF.

If you need upholstery material take this tip from us: don't pass up the new flameproof Naugahyde Upholstery that "U. S." Rubber scientists developed from war service! So fire-resistant that it is used on our fighting ships—so tough that it is used as seat covering in army trucks, tanks, and planes—the new "U.S." Naugahyde is a battle-tested upholstery, tougher, stronger, better than you'd have ever thought possible.

WHEN CAN YOU GET IT...?* Perhaps some Naugahyde will be released from war and made generally available sooner than you think. So bring us your problems now. Whatever your needs, there will be a Naugahyde upholstery for you that resists wear, looks smart, costs little.

*NAUGAHYDE is now available on priority, to conform with the following specifications: 34L13 Bureau of Ships; E-KK-L-136a, Type 3 Federal Specification; 12026A Air Corps Fireproof Specification; 27F11 U. S. Navy; AXS-992 Ordnance Department; MN245 (Both Types) Maritime Commission.

"U.S." NAUGAHYDE

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Serving Through Science

UNITED STATES RUBBER COMPANY

1230 Sixth Avenue . Reckefeller Center . New York 20, New York

TIPS ON DIESEL ENGINE MAINTENANCE

(CONTINUED FROM PAGE 95)

much cheaper and the results are about as good.

Keeping Engine Clean

The greatest thing one has to fight in a diesel engine is dirty oil and sludge. This one thing does more harm to the bearings than all other things combined. In order to try to overcome this we use a Skinner No. E-712 oil filter in connection with the oil filter that is on the Cummins engine as standard equipment.

Also we are installing a float in the oil sump, so that we may use the top oil rather than the oil from the bottom of the sump as is standard from the factory. This is a great improvement and seems to stop about 75 per cent of the main bearing scoring that is usual in these engines.

In order to keep the engine as clean as possible, at 10,000-mile intervals we flush the engine for 30 minutes at an engine speed of about 1000 RPM on diesel fuel with 2 quarts of motor oil added to the diesel fuel. We also spray the sludge out from around the valve stems and wash this down into the oil pan.

Before doing this it is suggested the oil filter cartridge be removed and left out and if an auxiliary oil filter is used shut it off or leave the cartridge out of it as the flushing oil may loosen up most of the dirt in the filter and send it back through the engine.

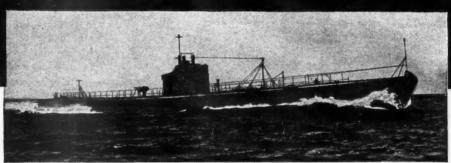
We watch our radiators closely at 70,000-mile overhaul period and almost always tear the radiator apart and clean it out. I like to stress the fact that in most cases the radiator is not looked at until the motor runs hot all the time and that is too late. Many motor ills and failures come from improper cooling, as you all know.

In some cases you may find the fan is set too far from the radiator core (we find 1 inch spacing from core to be the best). If it is not possible to get a fan blade large enough to adequately cool the motor shrouding the fan sometimes is of great benefit.

I am convinced we should have an oil cooler to use in the summer but to date we haven't found one that will do a job for us, and still find a place on the truck to mount it.

(TURN TO PAGE 98, PLEASE)

PORUS - KROME* Sails with Honor Ship



Official U.S. Navy Photograph

U. S. SUBMARINE SAILFISH

The submarine Sailfish has been awarded the Presidential Unit citation, according to a recent announcement of the United States Navy. The award was made in recognition of the submarine's daring operations against strongly escorted Japanese task forces and convoys, during its tenth war patrol, when four "important hostile vessels" were destroyed and heavy damage was inflicted on another.

The Sailfish has had PORUS-KROME on the cylinders of its main propulsion Diesel engines

for about four years...one of the first Navy vessels to use this new process. Since that time more than 76,000 similar liners have been processed for Navy Diesel Engines, which are used in submarines, destroyer escorts, mine sweepers, landing craft, etc.

The Navy requires rugged reliability in its engines...you need it, too, for lower operating costs. And that is just what Porus-Krome will give you. Write for information . . . then specify Porus-Krome.



PORUS & KROME

Good for the Life of your Engines

PORUS-KROME is pure, hard chromium which is applied to cylinder bores by the patented Van der Horst process. It has tiny pores and channels in its surface which serve as reservoirs for lubricating oil. feeding it back as needed. It reduces corrosion and wear and multiplies cylinder life 4 to 20 times.

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TIPS ON DIESEL ENGINE MAINTENANCE

(CONTINUED FROM PAGE 96)

We have had experience with oil coolers in the radiator water, or rather maybe I should say they were heat exchangers rather than oil coolers. We found that in reality it did not cool the oil to speak of and I can tell you we had plenty of trouble with flexible lines in hooking it up.

Axle Maintenance

In all our six-wheel trucks we use the Timken worm drive rear axle, of which we have two models, namely the 65700 and 66700.

We have three gear ratios, 4-4/5-1, 6-1 and 6-4/5-1.

I can say generally we receive good service from these units.

In order to insure good service the unit should be checked at intervals of 10,000 miles for the following: side play in carrier bearings and play in worm shaft thrust bearings and play in the worm shaft Hyatt roller bearing.

Alco the brass worm gear should be checked for unusual wear or damage, as oftentimes a ring gear rivet may break and cause damage to both worm wheel and worm. It is suggested a record be kept on condition of these so that unusual play or damage will be noted at once when inspected.

The brass worm gear almost always pits out after a few thousand miles of service, but this is not harmful.

It is sometimes the practice by some operators to reverse the worm wheel when overhauling, but we don't follow this practice as it only tends to weaken the gear, as it will pit out on opposite side, which will naturally weaken the tooth.

Tire Mating Crucial

The entire life of this type of four-wheel drive unit depends heavily upon the sizing of the tires. Tires must be matched closely at least at 2000-mile periods and must not vary more than ½ in. in diameter on front and rear wheels on same side of truck. Of course there should not be more than ½ in. to ¾ in. difference on opposite side, but this is not so vitally important as differential gears will compensate for this.

Tips on Steering

I should like to spend some time on the steering apparatus, but due to the fact there are so many different types and models of front axles, also different wheelbases, etc., I know of no set rule that will work on all of them but I should like to leave this thought. In truck and trailer operation, a large part of steering complaints are caused, not by the front axle of truck, but by a hard turning 5th wheel on the trailer.

Also don't always look at the front axle on equipment without a trailer, as you may find your trouble to be the rear axle is not following in line with front axle.

Brake Shields Valuable

I am not going to try to tell what is the perfect set up on brakes, but rather what we have found and what we think best. On our Freight-liner trucks and trailers we use a 7 in. x

(TURN TO PAGE 100, PLEASE)



Washing trucks and trailers with Speed Wash gets amazing results with little effort and great speed. Clean, fresh water feeds right through the handle and tufts, so that each 12 inch stroke does a complete job of soaking, scrubbing and rinsing. There's no waste motion changing tools and back-tracking over the same surface. You can see how this easily cuts washing work and time in half, does a better job, and also saves the finish.

FULLY GUARANTEED

Put Speed Wash to work on your trucks. If it doesn't measure up to your expectations, return it for a full refund of your money. Order on this liberal basis today. Extend your priority of AA-5 or better, to insure prompt shipment. Make out your check or money order to Milwaukee Dustless Brush Co.



"Dustless"—"Speed Sweep"—"Speed Wash"—brushes

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BRUSH COMPANY

526 NORTH 22nd STREET, MILWAUKEE 3, WISCONSIN



On the work fields of the home front, just as on the battle fields of war fronts, Spicer Transmissions, Auxiliary Transmissions, Universal Joints and Propeller Shafts are standing up under the most gruelling, punishing service ever imposed upon power transmission equipment. Where power delivery must not fail, and where motor vehicles must get through to deliver the goods, Spicer products are a "must" in the equipment specification. Spicer will be ready to resume immediately its large-scale production for civilian needs, when wartime needs are fully met. Spicer Manufacturing Corporation, Toledo, O.



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TIPS ON DIESEL ENGINE MAINTENANCE

(CONTINUED FROM PAGE 98)

3/4 in. block lining with a 16½ in. diameter brake drum. We also use an "S" type brake cam and cam is mounted in needle bearings at both ends. On the truck we use a 9 in. Westinghouse brake chamber and on the trailer we use a 10 in. brake chamber. We also use a brake shield on all brakes to keep the dirt out.

Now I know there are lots of "pros and cons" in regard to the use of brake shields, some saying that the shield will not allow the heat to dissipate, but for highway operation I will say use brake shields by all means.

Our brake lining life on these is around 175,000 miles, while with the shields off at least 50 per cent of the life is lost. Also with the use of shields we have no brake drum scoring while without them we have plenty of it.

Of course on logging hauls and the like probably shields would not be of any advantage but on highway service I think they should be used.

If the proper area of brake lining for the load is used (and I believe the brake experts claim 1 sq. in. of lining for each 40 lbs. of load to be controlled is adequate), one should not encounter undue heat in highway service.

Also I would like to say that we have had no trouble with the needle bearing Brinelling into the hrake cam in 300,000 miles of service. Our maximum brake pressure on these jobs is 60 pounds and 30 pounds is all that is necessary for average stops. Naturally with this low application pressure we have no brake drum breakage or trouble with the drums "bell mouthing."

I can't say too much of the necessity of keeping the anchor pins, cam bearings, and other brake rigging in good shape for satisfactory results, as I have seen cases of extreme neglect of these parts. The thought of these operators seem to be if there was any lining on the shoes, there should be brakes.

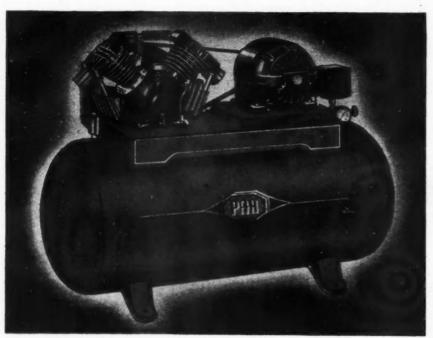
Along that same train of thought I say a brake lining grinder of a type that fits on to the axle tube and grinds the lining to the exact circle of the drum should be used. This will eliminate the "wear-in" period of the lining and it is during this period that lots of lining is burned up in spots and also this same condition causes heat checks and breakage in brake drums.

Salvage of Parts

I might mention some of the parts we salvage with good results. We build up splines on all clutch shafts and grind back to standard again. We may build them up several times as long as main drive gear that is on the end is still good. Before building up and machining we Magnaflux the entire piece. We have had no more breakage of these than on new parts.

On the Timken worm shafts the inner race for the Hyatt bearing is built solid on shaft. After this is worn out there is still many thousand miles left in the worm, so we machine off the worn race and install Hyatt inner race.

(TURN TO PAGE 102, PLEASE)



PAR MODEL 20

- A Heavy Duty 2 H.P. two stage 4 cylinder compressor equipped with 60 gal. tank.
- Designed especially for the average station or shop doing more than usual volume of air appliance operations.
- Maintains tank pressure of 175 pounds, assuring adequate air supply at all times.
 - Write for illustrated brochure of details.
 - BY COMPARISON-YOU'LL BUY PAR.

PAR DIVISION

LYNCH MANUFACTURING CORPORATION DEFIANCE, OHIO, U. S. A.



TIPS ON DIESEL ENGINE MAINTENANCE

(CONTINUED FROM PAGE 100)

We remachine almost all the brass valves in the Westinghouse air brake system, such as in the brake application valve, relay valve, etc. We find that they work just as well as new valves and if they are saved and a quantity are done at one time, the cost of labor per unit is of no consequence.

We are now having some parts chrome-plated, such as fuel pump cams, fuel pump cradles, etc. We have also had one crankshaft chromeplated but none of the parts have not been in service long enough to give a report on them, but we have every reason to believe they will be superior to original part, but only time will

Last but not least I should like to mention the general appearance of the equipment and condition of the cabs and seats. Remember your

drivers are the boys who can help to make a preventive maintenance program function and if no thought is given to their comfort, or the pride they have in the equipment they drive, you surely will not get the cooperation you should from them. While we do not practice the follow. ing for several reasons at present (most of it being labor shortage) some time in the future I hope to see each truck and trailer washed before each trip and cab cleaned out thoroughly. I am sure this would pay in the long run.

END

(Please resume your reading on P. 62)

THE ROLE OF TRUCKS IN THE INVASION OF EUROPE

(CONTINUED FROM PAGE 53)

a truck transportation problem and the basic unit used is the truck company. A truck company contains forty-eight vehicles for hauling cargo of various sorts. These truck companies may be equipped with the standard 21/2-ton, 6 x 6, or with heavy duty semi-trailers or full trailers, with a capacity as high as 45 tons each. All the truck companies performing port clearance are operated from a centrally controlled pool. Upon the arrival of a ship at a quay, the Port Commander orders truck transportation from the truck pool sufficient to clear a certain tonnage from the quay side to the inland dumps located in the general area of the port. The truck pool dispatches trucks to the quay side, at a rate determined by the capacity of the trucks and the loading facilities at the quay. The trucks load at the quay then proceed to a dump or depot, which may be from one to 15 miles from the quay side. After unloading at the depot or dump, the trucks return to the truck pool or to a control point at the quay, for redispatching. Upon return to the truck pool, the driver of the vehicle, assisted by mechanics performs a check on the vehicle to determine that it is in proper mechanical condition for making another trip. Minor adjustments may be necessary. If major mechanical conditions have developed, the vehicle is taken to the shop for repairs or over-hauling.

A major port, such as Cherbourg, when operating at full capacity, re-

(TURN TO PAGE 105, PLEASE)



tested, Fel-Pro Engine Gaskets . . . Metallic Pump Packings ... and any of the many other Fel-Pro Sealing Materials.

It pays to see your Fel-Pro Jobber First! For, while our Military and War Industry requirements are taking huge quantities of Fel-Pro materials, every effort is being made to keep our Jobbers supplied with the Gaskets YOU NEED TO KEEP AMERICA'S TRANSPORTATION ROLLING!

So to Save Time . . . and make sure you get the right gaskets







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CONSERVE YOUR TRUCKS

Make it all out for Victory—not time out for repairs. Conserve your trucks by frequent checkups. Do your part in backing the attack!

FEDERALS HAVE WON

By Costing Less to Run!

FOR 34 years the Federal Motor Truck Company has manufactured motor trucks exclusively. Designed and constructed by truck specialists, every Federal truck has extra inbuilt strength and extra power to meet the most punishing demands of present day motor transport needs.

Federal's complete plant facilities, experience and craftsmanship offer many valuable advantages to Federal owners. These broad resources, combined with the highest truck manufacturing standards, are responsible for those qualities of

ruggedness, endurance and economy which have earned for Federal a worldwide reputation for longer life, greater dependability and lower operating costs.

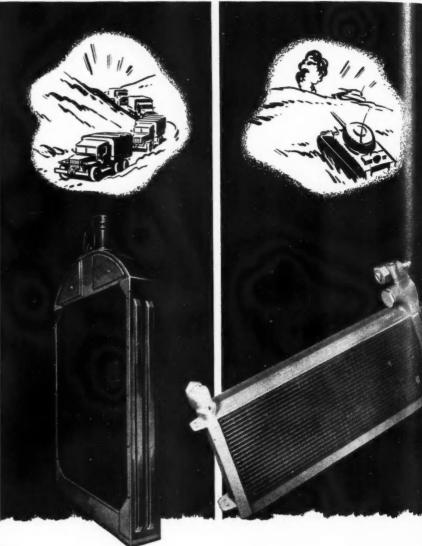
Federal Trucks have established a notable record of performance and owner satisfaction. They again are available in certain models for essential civilian needs. FEDERAL MOTOR TRUCK COMPANY
DETROIT 9, MICHIGAN



Federal has been cited again by the War Department for meritorious services on the production front.

Since 1910 . Known in Every Country—Sold on Eye to Continent





Dependability

Dependability is the keystone of Long clutches, radiators, and oil coolers—and that same dependability that is serving our fighting men on all fronts, in planes, tanks, trucks, and boats, will be available after the war in peacetime vehicles.

LONG MANUFACTURING DIVISION

BORG-WARNER CORPORATION



DETROIT 12, MICHIGAN WINDSOR, ONTARIO



THE ROLE OF TRUCKS IN THE INVASION OF EUROPE

(CONTINUED FROM PAGE 102)

quires several thousands of trucks for port clearance work alone. It is obvious that the control of this huge fleet of motor vehicles becomes an extremely complex problem. In such a large operation, vehicles are operated from several sub-pools. Roving patrols of mechanics, in wreckers, are constantly moving over the port road network to pick up disabled vehicles and repair them or bring them to the shop. Roving patrols of military police are likewise on the move to straighten out traffic tie ups and to see that vehicles are kept moving. In addition, the truck pools themselves maintain patrols of men to check on loading conditions at the quay side and wharves and unloading conditions at the depots or dumps, in order to see that vehicles are not dispatched at a rate faster than the ability of the terminal point to load or unload them. Accurate records are kept on each vehicle and load, a sort of perpetual inventory of the vehicles in the truck pool, showing where the vehicles are at all times and how many are available for dispatch. When a truck does not return to the truck pool at the time that it is expected back, action is started immediately to determine the whereabouts and the reason for the delay. The whole system is highly centralized. In order to reduce the time consumed in loading and unloading vehicles, semitrailers are operated on a ratio of two per each truck tractor. Truck tractors with empty semi-trailers are dispatched to the quay side where they release the empty semi-trailer and pick up a loaded one. The semitrailer is taken to the depot or dump where it is released from the truck tractor. The truck tractor then picks up an empty semi-trailer and takes it back to the truck pool and eventually to the quay side. This type of operation has created a special maintenance problem because of the impossibility of keeping an accurate check as to the mileages that each semitrailer has run. Therefore, periodic maintenance inspections are performed on a time basis instead of a mileage basis. Each semi-trailer has a card tacked on it, indicating the last date on which it had a major inspection. Upon arrival at the truck pool, this card is checked and at the end of a week or two weeks (depending upon the load and weather conditions) a complete inspection is performed.

From the depot and dumps in the port areas, supplies are next moved to forward storage areas or to depots and dumps in the Combat Zone. This type of movement is known as Line of Communications hauling and again the basic unit is the truck company. Separate truck pools are formed to

perform only Line of Communications hauling, and these truck pools are located at strategic points in the Communications Zone, usually a major depot area. The operation of these truck pools is de-centralized to the various section commands of the Communications Zone. Demands for the movement of supplies or troops to the Combat Zone are submitted through the Transportation Corps Headquarters to the proper truck pool. The truck pool informs the

(TURN TO PAGE 107, PLEASE)



TO HELP YOU.

... in the planning of your peacetime engines we have prepared this detailed description of the VISCO-METER*-its purpose, operation, parts, assembly and servicing.

If you are in any way interested in the design, manufacture, sale or use of internal combustion engines . . . gasoline and diesel...then you need the VISCO-METER* story.

Manufactured since 1929 VISCO-

METERS* are in use the world over, the only product of its kind ... providing constant visual information on engine lubrication while the engine is in operation. Standard equipment on thousands of military vehicles, marine and industrial engines.

We invite you to write, wire or phone for a copy of this booklet. If you say so, a VISCO-METER* engineer will bring it to you.

*Fully covered by U. S. and Foreign Patents



It takes teamwork to keep trucks rolling today

These days every truck is at the mercy of its tires.

That's why so many operators are using Fisk Mileage Service. It saves tires—helps to keep trucks on the job right through the tire shortage.

There's nothing complicated about Fisk Mileage Service. But your tires get the practical, experienced care that only truck tire experts can give them.

That means your tires stay in service and your trucks stay in service longer. That means you have fewer road delays, that more loads can be delivered in the same length of time. That means you save money by cutting your operating expenses.

Put Fisk Mileage Service on your tire conservation job. Call in your Fisk Truck Tire Distributor today.

FISK TIRE MILEAGE SERVICE

I Increases tire mileage 2 Catches tire trouble before it happens

3 Cuts operating costs 4 Provides accurate tire service records

5 Supports applications for new tires

MILLEAGE SERVIOL CALUYOUR TRUCKTURE DISTRIBUTOR

THE ROLE OF TRUCKS IN THE INVASION OF EUROPE

(CONTINUED FROM PAGE 105)

Transportation Corps Headquarters concerning the availability of vehicles to meet the demand and the type of semi-trailer to be used. The Transportation Corps Headquarters then arranges for the necessary routing and timing of each major movement. Records are kept centrally at the Transportation Corps Headquarters indicating the number of vehicles on the road, their probable time of return to the truck pool and the approximate availability of vehicles in the truck pools at each hour.

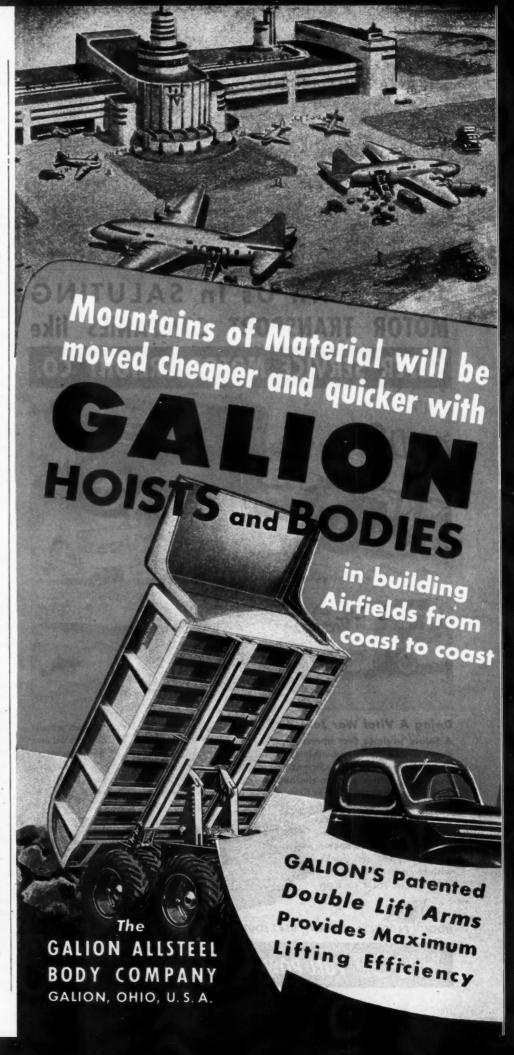
Major movements of supplies and troops are made in road convoys. Transportation Corps traffic control posts at points along the routes are informed in advance as to the convoy schedules for the day. They report back to Transportation Corps Headquarters whenever these schedules are disrupted for more than half an hour in either direction. By this means, the Transportation Corps Headquarters can determine accurately when the vehicles are due to return to their truck pools.

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One hour is allowed from the time vehicles return to the truck pool until the time that they are considered again available for dispatching. The purpose of this hour is to provide time for the driver to eat and attend to personal affairs or for a shift of drivers to be made. When a vehicle returns from a trip, it is run over an inspection pit, and trained mechanics give it a thorough inspection, performing necessary minor adjustments or delivering the vehicle to the shop if necessary. The driver is not released from the vehicle until the mechanics have completed their inspection. The above system of vehicle maintenance inspection was evolved to meet one of the problems peculiar to this particular military operation. Normal practice in all military units having motor vehicles is to assign one driver to each vehicle and make the driver responsible for inspecting that vehicle and reporting any serious mechanical deficiency. However, in order that maximum use could be obtained from all trucks and semi-trailers it was decided that they would operate 24 hours a day. For this purpose, two

(TURN TO NEXT PAGE, PLEASE)



THE ROLE OF TRUCKS IN THE INVASION OF EUROPE

(CONTINUED FROM PAGE 107)

drivers were assigned to each vehicle, one driver being on the road while the other is resting. This meant that vehicles would be given much greater usage over the same period of time than would normally be the case. Inspection by the team of mechanics was evolved to meet the problem created by greater usage and less definite fixing of driver responsibility.

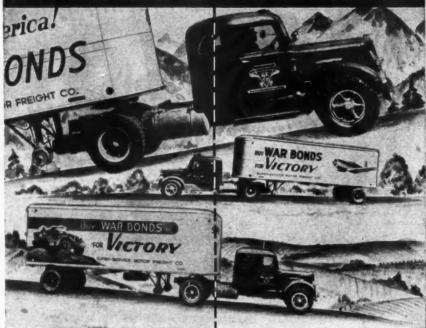
As the rail network becomes extensive, the hauling of supplies from railheads to Combat Zone will be performed in exactly the same manner as when the supplies are hauled from the ports to the Combat Zone.

Two other types of motor transportation are provided by the Transportation Corps. One type is the provision of truck companies for meeting needs of various static installations, such as depots and depot areas and major headquarters. Each large depot area has a certain amount of internal hauling and housekeep. ing to be done. It has been found much more feasible to maintain and operate cargo vehicles efficiently if the transportation is provided by mo. tor transport units rather than when vehicles and personnel are simply assigned piecemeal to an installation. The other type of transportation supplied by the Transportation Corps is performed by car companies assigned to the Headquarters of the Communications Zone, sections of the Communications Zone, ports, and other headquarters requiring a considerable amount of staff transportation in the form of passenger cars, reconnaissance cars and jeeps.

The Transportation Corps in the Continental operation may be compared to a huge trucking concern under contract to the Commanding General of the Theater of Operations. This concern operates upwards of 10,-000 vehicles over a major portion of the Theater of Operations. It receives requests for the movement of supplies of all services, it moves bulk gasoline in 2000 gallon gasoline semitrailers for the Air Force. It moves bridging for the Engineers in 10-ton semi-trailers and 21/2-ton trucks with extra long bodies. It carries gasoline and Diesel fuel in 750 gallon skidtanks, which can be loaded into a 21/2-ton truck when needed and removed from the truck when the vehicle is required for other purposes. Not only does the Transportation Corps receive all requests for movement, by motor transportation, of the supplies of all services, but it depends on other services to keep its motor truck fleets in operation. The vehicles themselves are supplied by the Ordnance Service, and heavy repairs are performed by the Ordnance Service also. Vehicle fuel is supplied by the Quartermaster Service. This vast concern must co-ordinate the movement of these thousands of vehicles of varying types to suit each particular need, see that vehicles are not idle at any time, that they are moved in large groups from one area to another as the flow of battle changes, and that the maximum number of vehicles and personnel are constantly available to carry the troops to the field of action and to give them the tools to finish the job.

JOIN With Us In SALUTING MOTOR TRANSPORT COMPANIES

SUPER-SERVICE MOTOR



Doing A Vital War Job, Well!

A Salute to those fleet operators who are employing every possible method and device to help them efficiently perform their vital service to the nation. Super-Service Motor Freight Company,

Nashville, Tenn.-one of the principal trucking lines of the South-has, like hundreds of other fleet operators, equipped its trucks with Hoof Full Power Governors...in order to help

make engines outlast the war, obtain maximum gas mileage, conserve oil and tires, and reduce maintenance costs.

Although military applications are rightly receiving preference, Hoof Full Power Governors, under existing regu-

lations, are also available to America's war essential transport industry. Send for your copy of the Free Booklet,"Everything Under Control" and the name of your nearest jobber.



PRODUCTS COMPANY, 6543 SOUTH LARAMIE AVENUE, CHICAGO 38, ILLINOIS

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(Please resume your reading on P. 54)



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VALVE FACE "MIKE" DOUBLES VALVE LIFE

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found this to be very effective. For example, we find at least two out of every 12 new, wartime valves are .001 in or more off. This is determined by a special measuring device which we made here in the plant, at a cost of about \$12 for labor.

As shown by the accompanying illustration, it was made by attaching

a cylinder gage to an arm on a specially constructed stand. The angle of the valve face is such that, when turned on the pin of the gage, defects are accurately registered.

The stand and holding device for the valve are made from a piece of tool steel about 11 in. long and 1 in. in diameter. The main bar is keyseated full length. Keyed, sliding, steel rings with vertical posts hold the valve in position. Thumb screws on the rings permit adjustment for different valve lengths. When using the gage, the operator holds the valve firmly in place and turns it around slowly until the entire face is checked. A short steel coil spring hooked around the bar and over the valve stem helps hold the valve in place while testing it. It takes only a few minutes to test a set of valves with this simple device. When we find a variation of more than .0005 in., we put the valve on the refacer and bring it to that degree of uniformity.

It is a common thing for a valve face and its seat to be off .002 in. and .004 in. Should the defect of the valve and seat happen to come together, a valve leak of .006 in. would result. Then the valve would start burning out. One bad valve out of 12 will ruin the whole job.

We find that the main thing in testing valves with this device is to hold the valve steady. Allow no chatter, so that as the valve is turned around, an accurate reading on the gage is obtained. The stand should be made of substantial material, heavy enough so that it will not spring under weight or pressure in the operation.

If it were not for this equipment, we would be no better off than before.

We are now grinding our valves with one deg. interference angle. The seat is ground to 46 deg. and the valve face to 45 deg. We also use Prussian Blue to see if the valve seats properly, then correct the inequality, if any.

Wartime Bearings Unsatisfactory

Wartime bearings are bad. The materials are too soft. Despite the fact that we use oil filters and change both cartridge and crankcase oil every 1500 miles on each unit, we have to put in new sets of connecting rod bearings about every 10,000 miles, with 12,000-mile maximum. We have taken out one crankshaft, with 200,-000 on it, that was out of round. After doing two jobs of grinding down all the throws with a portable grinder, without removing the crankshaft from the motor, we found it did not pay. The main bearings were badly worn and would not hold oil pressure.

We tried to get standard crankshafts. Our parts distributor told us they could not furnish standard crankshafts, but that the .030 inundersize crankshafts were equally as

(TURN TO PAGE 112, PLEASE



Use K & W Radiator Seal first. It requires no service labor—does not affect hoses or thermostat—leaves nothing in suspension. And, K & W repairs are permanent!

ASK YOUR JOBBER FOR

K&W Radiator SEAL



Results are quick and conclusive. Give K&W Radiator Seal only 30 minutes. If the leaks are not stopped in that time, don't waste time on any seal because you've got a shop job and only one thing—a competent radiator repair shop—can stop them! K&W Radiator Seal is sold on a money-back guarantee.

KERKLING & COMPANY BLOOMINGTON, INDIANA

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VALVE FACE "MIKE" DOUBLES VALVE LIFE

(CONTINUED FROM PAGE 110)

good as standard. Perhaps they are just as good, but now we cannot get the .030 in. undersize bearings.

We have one unit on which we waited six months for two main bearings and rod bearings. We are informed that better quality of replacement bearings will not be available for some time. Obviously, the bear-

ing problem is still unsolved and will no doubt remain so until present restrictions are eased to permit pre-war quality bearings for replacement needs.

Tire Experience Good

We are proud of the mileage records and low cost of tire maintenance on our fleet covering a period of several years. For example, our pre-war tires gave us an average closely approximating 150,000 miles per carcass. That included the original tread rubber and from three to four recaps. Original tread rubber and each recap averaged about the same number of miles, or 35,000 to 40,000 miles for each original tread and each recap.

We are still recapping approximately three old tires to every new tire we buy. However, due to wartime conditions, the total miles per tire have dropped materially, or between 50,000 minimum to 75,000 miles maximum for original tread and three to four recaps for each carcass. The proportionate mileage between original treads and recaps remains the same.

It will also be obvious that recapping not only saves our company a lot of money, since the cost of five recaps is only slightly more than the wartime price of a new tire of the same size, but we are able to keep our trucks and trailers rolling. That, we think, is the biggest factor today when new tires are unavailable at all for many weeks and possibly months.

It is only fair to state that these mileage records would be even higher under average operations. To illustrate, our trucks go into junk yards to pick up waste paper. Thus, our tires are subjected to the many hazards running over sharp metal objects, cut glass and the more insidious pieces of wire or rusty nails which imbed themselves in the tread, eventually damaging the carcass.

This condition makes many complete vulcanized sections necessary and shortens the life of tires, in one sense of the word. On the other hand, the vulcanizing service also helps to get mileage that otherwise would be lost.

Tire Program Fundamentals

Here are the basic phases of our tire maintenance program which are working so well to conserve rubber and keep our tire costs to the lowest possible minimum:

Long mileage begins with preventing premature wear — stopping failures before they happen. We check all tires on every trip out regardless of distance. The tires are checked for proper pressure with a gage, not with a hammer or kick with the foot.

Checking the tires does not end with gaging the air pressure and inflating to the proper pressure. Examination of the treads and sidewalls

(TURN TO PAGE 116, PLEASE)

Grind King Bolt, Piston, Conrod Bushings and 75% of Hydraulic Brake Cylinders . . .



TYPICAL
DIESEL
LUBRICATION
PROBLEMS:

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4. Removal of Deposits from Engines

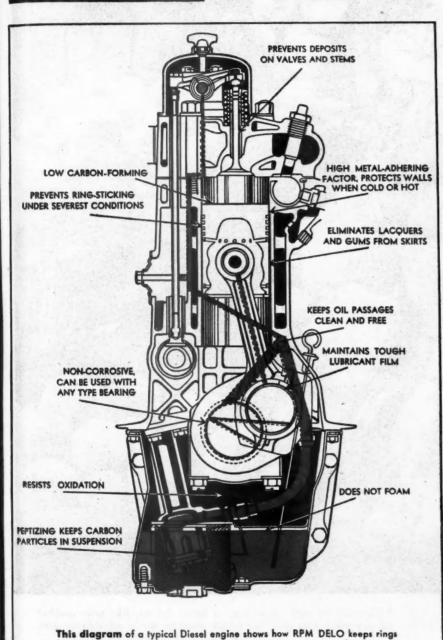
RPM DELO will clean your engine of sludge and other deposits, even in the ring-belt, unless accumulations of carbon, gum, varnish, etc., have cemented rings so tightly that oil cannot get behind them. The following procedure is recommended for purging conventional engine systems:

- 1. Drain present oil from crankcase while hot.
- Renew filter element to trap abrasive particles that may be carried in circulation during purging.
- 3. Fill crankcase with RPM DELO.
- 4. Run engine at fast idle for two hours, maintaining water jacket temperature of approximately 200° F. minimum.
- 5. Drain again while hot and refill with RPM DELO.
- 6. Place engine in regular service and drain at one-half normal drain period or 750 miles, whichever comes first, for two or three drains. Check oil frequently as removal of deposits may temporarily increase oil consumption.
- 7. Drain while hot. Check oil filter and replace when necessary.
- Refill with RPM DELO, returning to regular oil drain and filter change period, and continue to use RPM DELO.

RPM DELO is made from base oils especially selected for non-deposit-forming characteristics, and contains a detergent which keeps foreign particles in suspension. It also contains an anti-oxidant which prevents the formation of gums and lacquers. It is non-corrosive, may be used with any type of bearing. RPM DELO has world-wide distribution and is marketed under the following names: RPM DELO, Caltex RPM DELO, Kyso RPM DELO, Signal RPM DELO, Sohio RPM DELO, and Imperial RPM DELO (Concentrate). Ask your Diesel engine manufacturer or distributor for the name of the RPM DELO supplier in your vicinity.



The typical cleanliness of engine parts when RPM DELO is used is illustrated by this oil filter removed from an engine used in heavy duty Diesel bus service for 50,000 miles. Oil pump screen and valve chamber were comparably clean.

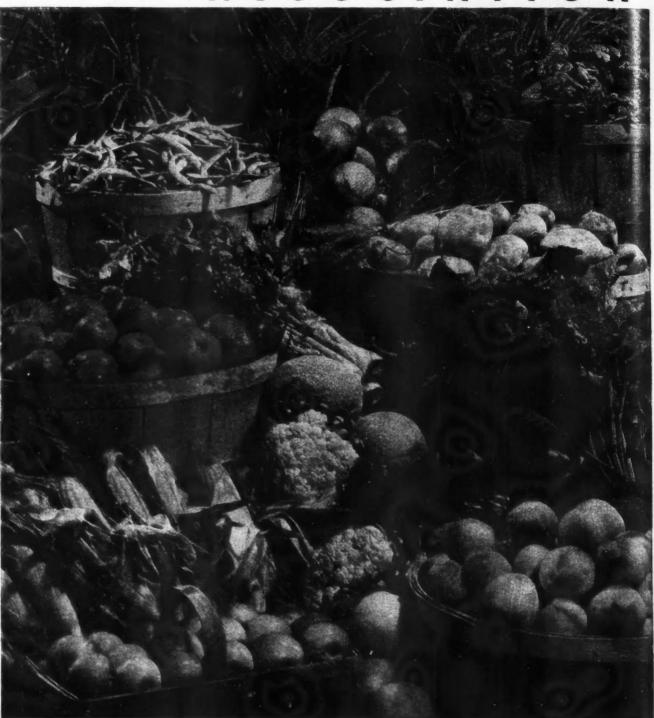




free and maintains clean operation.

STANDARD OF CALIFORNIA

* * * * * * * A S S O C I A T I O N



Fall, with its rich abundance is here. Let us, like wise mother nature, plan now that our future may be one of abundance, too.

MANSFIELD, CENTURY,

MEANS EVERYTHING

F A TIRE MANUFACTURER is to deliver a truly better tire without increasing its price to the truck owner, he must hold a competitive advantage somewhere.

This competitive advantage is held by Mansfield through its long association with America's leading wholesale distributors—a system of tire distribution which is unique in the tire industry.

By reason of this singular advantage — a lower distribution cost — Mansfield can go beyond the common standards of tire quality. Mansfield can deliver thousands of miles of extra, built-in tire quality which are all gain for the truck-fleet tire buyer.

* * * * *

When you need tires, call the nearest wholesaler handling a Mansfield line. Perhaps this wholesaler already is supplying you with shop tools, parts, accessories, and other truck maintenance needs. You will find that he is serving other fleet operators and tire dealers right in your territory on a friendly, efficient, low-cost basis. Such association means everything.

THE MANSFIELD TIRE & RUBBER CO. . MANSFIELD, OHIO



RICHLAND, UNITED

VALVE FACE "MIKE" DOUBLES VALVE LIFE

(CONTINUED FROM PAGE 112)

is made to locate tread-cuts, bruises or foreign articles imbedded in them. All breaks are repaired immediately, from a spot job to close up a cut, to prevent moisture from seeping into the carcass to weaken it, to a sectional repair or a complete recap.

END (Please resume your reading on P. 56)

TIGHT TIRE SITUATION MAY LAST REST OF YEAR

(CONTINUED FROM PAGE 40)

rent production rate is nearly double that-roughly about 17,000,000. But the clincher in the deal is that Army requirements have kept pace or outstripped the increase in production, with the result that essential civilian truckers are on the short end. It's as simple as that. That's why industry spokesmen say that if the end of the war in Europe comes soon and brings with it a cutback in military needs. the shortage will be a matter of his. tory. They have the ability to produce, no mistake about that.

Army's Margin of Safety

The next logical question is "Does the Army need all the tires it is taking?" The stories about huge piles of tires rotting in piles at storage depots and on unused trucks are as numerous as there are smoking compartments to tell them in. However, in many cases it has been shown that while the piles remained at the same spot for months, the identity of the tires may have changed several times. The prevailing opinion in the rubber industry is that a look at the European war since Invasion Day makes out a pretty good case for the Army. With railroads largely wrecked in France either by the Allies or the Germans, more than a million men, and countless thousands of tons of supplies have been moved in over the beachheads by practically only one means of transportation—the motor truck. Considering the scope of operations and the length of Allied supply lines now that the troops are clear across France, any fleet operator can appreciate the tremendous number of trucks required and the terrific mortality in tires operating over the worst kind of terrain under high speed and overload. Add to this the tires required on combat vehicles and the terrific losses in tires from wear. abuse and battle, and it is understandable that replacements alone must run into prodigious figures, to say nothing of original equipment needed.

Of course, it is common knowledge that the military follows the policy of requisitioning more than it needs. That is as fundamental to war as the spark plug is to the gasoline engine. It is sound military policy to have twice what is needed, rather than to fall short by one per cent and lose the battle. No one quarrels with that. The real question, however, is whether the backlog is beyond the bounds of reason so that civilian needs are pinched unnecessarily. That probably is the chief bone of contention right now between civilians and the military. And until it is cleared up, no one can tell when the situation here at home will be relieved.

(TURN TO PAGE 120, PLEASE)



TRUCK EOUIPMENT

Six wheelers and heavy duty trucks.



For short and long W. B. chassis.







or platform bodies.



"SUPER" HYDRAULIC HOIST DUMP BODIES

sizes 5 to 30 ton capacity.

MODEL "ZB" PLATFORM HOISTS

make dump bodies out of flatbed, stake, or grain bodies.

"STAKE BODIES" "PLATFORM BODIES"

Lengths up to 20 feet.

"LIFT GATE"

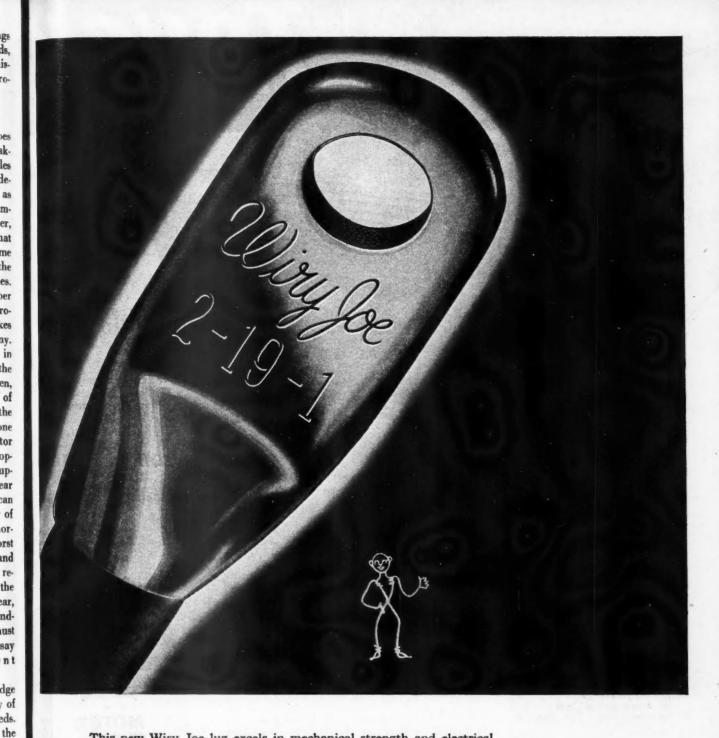
HYDRAULIC tailgate lift for loading truck van bodies, platform bodies, etc. One man does the work of three!

Write or wire for literature and prices Nation-wide Sales and Service



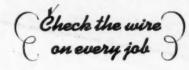


STREATOR, ILLINOIS



This new Wiry Joe lug excels in mechanical strength and electrical efficiency—ends battery cable headaches! Copper cable and seamless copper lug are pressure welded into a homogeneous unit. There's no solder . . . no burned insulation! The lug extends over the insulation, eliminating fraying. The weld cannot be broken regardless of twist or strain . . . there's no bare wire to arc or waste current—electrical loss is impossible!

Ask your jobber about Wiry Joe's new battery cable lug. And look for the announcement of other Wiry Joe innovations soon!





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Sold for TRUCK

Multi-Ply Cover . Much Longer Wearing Than on

Passenger Car Belts

30% Stronger Cords Than Used in Passenger Car Belts

"80% LONGER LIFE'

CHICAGO, III.

Get This

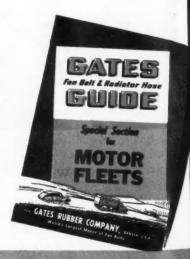
Valuable *HAND-BOOK*

Special Heavy-Duty

Compound

For more than 25 years, this Gates "FAN BELT and RADIATOR HOSE GUIDE" has been the belt and hose "bible" of virtually the entire Automotive Industry. In this new 1944-5 Edition a special section is devoted exclusively to the needs of Motor Fleets. It tells you everything you need to know about Belt and Hose sizes, specifications, interchangeability, etc. Due to the national paper shortage, this edition is severely limited.

Write for your copy TODAY!



I would like to have a copy of the "Gates Fan. Belt and Radiator Hose Guide" which you will send without cost or obligation to me. The Gales Rubber Company Denver (17) Colorado or obligation to me.

Firm Name

Zone----Address....

State.....

MILW AUKEE,

"Your specially engineered TRUCK belt is now in use on our entire fleet. It is far superior to any belt we have ever used."

Advance Express Co.

Dave Winters

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WELLSBORO, Pa.

"Since using your special TRUCK belts we haven't had a single road failure. They often last twice as long as other belts. We can count with safety on at least 50% longer life."

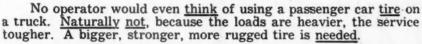
H. W. Taynton Trucking Robert Taynton

WEARS TWICE AS LONG

and BUS Use DVLY

You Need Special STRFNGT in a Truck BELT

Just as much as in a Truck TIRE!



The moment you think of it you realize, of course, that exactly the same facts apply to belts.

A typical passenger car belt, for example, carries a 3.8 horsepower load. The belt on a regular truck must transmit 13 horsepower to turn the fan, pump and generator. And this is not all of the story. Trucks and Buses often use additional belt driven equipment. There may be vacuum pumps, compressors, airconditioning units and so forth.

On top of all, trucks and buses run longer hours-often 24 hours a day. They must change speeds as many as 600 times a day with rapid acceleration, abrupt deceleration, stops, starts and idling—all of which put a strain on truck and bus belts far greater than a passenger car belt ever has to stand.

Is it any wonder that big operators by the hundreds are turning to the one belt that is specially engineered for this extra heavy service—the Gates TRUCK Belt.

Read the letters reproduced on these pages. They tell you how practical, experienced, hard-headed operators are getting 50% to 80% longer belt wear since they began using the Gates TRUCK Belt. More important, they tell you how much valuable operating time they are saving through fewer road failures and fewer delays for servicing.

One thing we ask you to bear in mind. The Gates TRUCK Belt is sold for use on <u>Trucks</u> and <u>Buses only</u>. This is because some of the materials used are allocated for this particular purpose. Please do not use any of these belts on passenger cars. Truck and Bus transportation plays a direct and definite part in our nation's war effort.

If you are interested in keeping <u>your</u> trucks and buses operating most efficiently and economically, call your jobber today and tell him to send you a trial order of Gates TRUCK Belts.

GATES Jobbers NOW Have Stocks to Serve You!

Hundreds of

BIGLOPERATORS

LOS ANGELES, Calif.

EVER

"In our heavy hauling from Arizona across desert and semi-desert regions with the thermometer frequently well over 100 degrees, we can run your Gates

can run your Gates
TRUCK Belt long after it would
have been necessary to replace any other belt we have

solidated Copperstate Lines
R. C. Hutchison. Shop Supt.

SHREVEPORT, La.

"Your specially engineered TRUCK belt has eliminated fan belt worry. It outlasts any truck belt we ever used before by one-third or more."

Louisiana and North West

ANY OTHER

NEWARK, N. J.

"Really tough service on our milk trucks played havoc with belts until we installed Gates Specially Engineered Truck Belts. We are now using only half as many belts as before—and saving a lot of time previously spent on belt adjustments."

Bloomingdale Dairy Co., Inc., Edwin R. Fantel, Maint. Supt.

GATES RUBBER Co

DENVER, U. S. A. World's Largest Makers of V-Belts

COSTS IN HALF'

TIGHT TIRE SITUATION MAY LAST REST OF YEAR

(CONTINUED FROM PAGE 116)

Information on actual military requisitions for the fourth quarter still is restricted as far as number of units is concerned, but a clue may be gleaned from the fact that the Army took 88 per cent of the tires 8.25 and over during August and September. One tire company official ventured a guess that this percentage might be

reduced toward the end of the year. If this were to happen, or even if the percentage remains the same, it definitely would be on the credit side of the ledger because production is expected to maintain its upward course. This uncertainty about what the military will take is the fog clouding the future of the civilian supply at the moment.

Shortages Not Industry's Fault

From a production standpoint, it is necessary to review the situation

since Pearl Harbor to appreciate the magnificent job the tire industry has done and to realize that any shortages now are not chargeable to them. With tire manufacture greatly curtailed, much of their manpower went to other industries or to the armed forces. At that stage of the war, the military had not as yet a clear picture of what the truck tire requirements would be. Then, only last year, the Army found through battle experience that the need would be great. Immediately a \$75,000,000 expansion program was put into effect and the industry enlarged its facilities with new buildings and equipment. Some of these projects still are in the making and will come into production late this year and early next

year.

Meanwhile, the industry

Meanwhile, the industry had lost much of its manpower. The armed forces had taken 190,000 men, of which 6000 were skilled tire builders. As a result, as late as last spring, new facilities provided by the expansion program stood idle for lack of men to operate them. Priority manpower referrals and a vigorous recruiting program have alleviated the situation somewhat by now, and return of skilled tire workers from the Army also has helped. In addition, women are being trained to build passenger car tires, thus releasing men for the heavier and more difficult job of making truck tires. Currently, a big factor is absenteeism, which runs about 10 per cent for the industry. One spokesman said that if this problem could be licked, production would be up to the 30 per cent increase asked by the government early in August. While manpower still is a problem, cutbacks in other industries are expected to work for an improvement soon.

Materials Not Major Problem

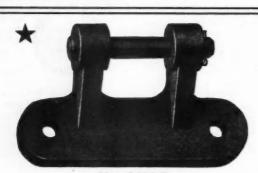
Materials are no longer a major problem in the truck tire industry. Although the current stockpile of crude rubber is down to between 90,000 and 100,000 tons, the synthetic rubber industry has hit its stride and output now stands at about 820,000 tons annually. At the same time, quality has been improved so that the recent directive calling for 70 per cent synthetic in large truck tires is causing no great concern. Admittedly, these tires are not as good as those

(TURN TO PAGE 123, PLEASE)

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'CLEVELAND" HINGES SOLID PORGING

"CLEVELAND" HINGES, whether in use for commercial purposes or the rigid demands of war are satisfying the exacting tests of performance... "CLEVELAND" IRONS have stood the most severe tests possible down thru the years since 1881. The broad line of irons, covering every body need, is made from the best grade open hearth steel.



No. 2426-E Two Inch (2") Projection

Designed for rear doors, permitting the door to fold against the side of the body. Made to take $1\frac{1}{2}$ " Hinge and $1\frac{1}{4}$ " Hinge.



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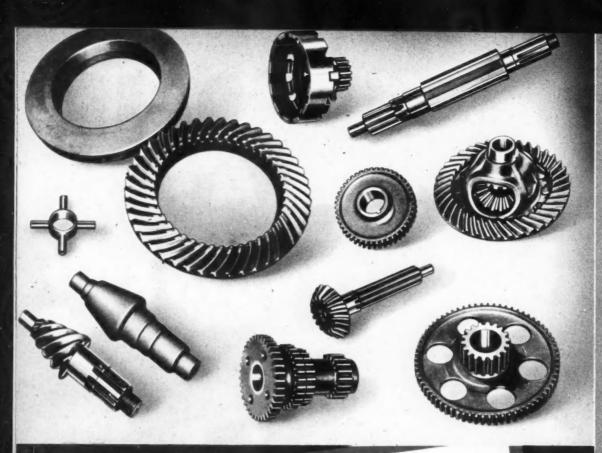
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STRONGER, MORE DURABLE "SHOCK TROOPS"

These are the "shock troops" of machinery and equipment Forgings: the "working" parts, stationed at the strategic posts of

It is one thing to possess good equipment and skilled craftsmen greatest shock and strain. for producing good forgings. It is quite another and vitally important thing to command Clark's rich and varied engineering experience, to draw upon Clark's long first-hand understanding of operating problems in many branches of revenue transportation. As builders of commercial axles and transmissions of industrial tractors and railway trucks, Clark's own rigid standards of perfection are your soundest guarantee of satisfaction.

For stronger, more durable "shock troops"—Frost Gears and Forgings; with their plus-value of Clark engineering counsel—yours to command at no cost.

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RAILWAY CAR TRUCKS



METAL SPOKE WHEELS

TIGHT TIRE SITUATION MAY LAST REST OF YEAR

(CONTINUED FROM PAGE 120)

made of all crude or a smaller percentage of synthetic, but use of rayon cord makes them acceptable. Recent expansion in the rayon cord industry has brought the supply up to needs, and carbon black also is available in sufficient quantities.

Other production complications have been the more difficult and timeconsuming processes required with synthetic rubber; unfamiliarity with synthetic processing, requiring more machinery; switching from production of one size tire to another upon demands from the military, and the competition from manufacture of airplane tires. One large 56 in. aircraft tire requires as long to build as seven 8.25 tires. Yet plagued by all these problems, the tire industry has doubled its best peacetime production. Even this figure needs some clarification, since actually three times as many man and machine hours are required because of the more difficult construction of battle

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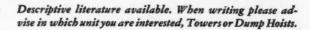
Since the outlook is not too bright for replacements, the industry is encouraging fleet operators to bear down even harder on tire care and maintenance. Some tire companies furnish tire maintenance service to fleet owners. They report that truck operators generally are doing a satisfactory job of tire care. All are agreed that high speed and overload are the two principal causes of tire failure.

Synthetic tires generate more heat than natural rubber ones do. The critical operating temperature is about 240 deg. at the hottest point. If load, speed and inflation are maintained to hold operating temperature below 230 deg., the tire probably will wear out without failing. When a tire is operated close to its critical temperature point, an increase of 10 per cent in the load or of 5 m.p.h. in the speed may reduce tire life to 2 per cent of normal. Special care should be maintained on long runs on hot days, since a 10 deg. change in atmospheric temperature will be reflected in the tire temperature by the same amount. Other points emphasized are recapping at the proper

(TURN TO NEXT PAGE, PLEASE)

Here's What's New in Hydraulic Units







BIRD-WHITE COMPANY

DEPT. 4. 3119 WEST LAKE STREET, CHICAGO, ILLINOIS

TIGHT TIRE SITUATION MAY LAST REST OF YEAR

(CONTINUED FROM PAGE 123)

stage of wear, proper mounting and dual matching, and education of drivers in good loading and driving habits.

Army Vs. Civilian Limits

In face of the impending critical shortage, truck operators are wondering just what will happen if the situation gets so bad that trucks are pulled off the road in sufficient numbers to cripple the domestic economy. While no one is able to say definitely, the consensus among tire, truck and transportation spokesmen is that the military will, either voluntarily or under compulsion, shade its demands enough to keep the absolute minimum of trucks rolling that will keep the home front going. They point out that this might reduce the margin of safety that the military likes to hold, but that the Army will realize the

need to keep the war effort going as an indirect military function big fight will come in determining just when the critical stage is at hand.

END (Please resume your reading on P. 41)

GASOLINE ENGINE DEVELOPMENT

(CONTINUED FROM PAGE 57)

have engines developing 165 BMEP unsupercharged and 200 BMEP supercharged with .55 to .6 hp. per cu. in. in the normally aspirated engine and even more in the super-

charged version.

Perhaps this seems to be shooting for a star, but you may remember that a paper given in New York in November 1938, forecast 125 BMEP. At the moment that seemed audacious but within a year that goal had been surpassed. There is, today, an engine which is developing over 140 BMEP with 80 octane fuel, so we are well along the way and this forecast of 165 BMEP may also prove to be too conservative.

The cost of these engines will be lower when measured in dollars per horsepower even though the dollars per cubic inch of displacement may rise due to better quality of materials which, in turn, contribute to longer life and lowered maintenance.

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All

These higher outputs will be needed for, after the close of hostilities, this nation will undoubtedly have an era of road building which will produce main intersectional and transcontinental roads which will permit high speeds, and this, in turn, may lead to legislation as to minimum speeds which must be maintained even on the upgrade. This minimum speed will be such that more and more power will be needed and we manufacturers will supply it. In order to do this, we will undoubtedly have to take full advantage of the fuel and completely redesign our engines to most advantageously use fuels we believe will be available. Fuels alone should allow 10 per cent to 15 per cent increase in output with very little change, other than that we put in high compression pistons or shave a little off the head. There are quite a number of ways in which additional performance can be obtained; some of which may appear at the (TURN TO PAGE 126, PLEASE)



bus or truck quicker and easier with Puritan Hy-draulic Brake Fluid. You don't have the bother checking what brand of fluid was used previously, because Puritan mixes with any or all of them. Puritan is the all-purpose Hydraulic Brake Fluid developed on a Research Fellowship at the Mellon Institute of Industrial Research.

It's made from a patented all miscible, non-gumming base. Easier on rubber than any other fluid on the market. Meets the severest requirements of viscosity, pour point, action on metals, etc. Saves on maintenance; lessens service layups.

Standardize on Puritan Hydraulic Brake Fluid. Regular grade for ordinary passenger car service. Super grade—aircraft quality for trucks and busses and heavy duty service.

Now Back in quantity production!

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★ Football is still a matter of touchdowns—but time has developed a more skillful game with many technical improvements.

The duties of a tapered roller bearing are the same, too. Tyson, however, has introduced the All-Rolls design which has vastly increased its efficiency.

With the addition of thirty percent more rolls, Tyson has almost doubled ordinary roller bearing life. Size for size, the Tyson "All-Rolls" bearing has greater load capacity—more strength and rigidity. It's a heavy-duty bearing for heavy-duty jobs.

The big name in bearings today is . . . TYSON!



* KEEP ON BUYING WAR BONDS *

GASOLINE ENGINE DEVELOPMENT

(CONTINUED FROM PAGE 124)

moment to be "gadgetry" but with further intelligent engineering development some of these may become quite the acceptable thing.

More Exact Timing

With the increase in compression ratios, for instance, spark timing will perhaps become much more exact than that given by our present day distributors with their rather wide tolerances as built in today's production. Distributor points have been a source of a good many headaches for, as the fibre block wears, spark timing on the engine changes and the need for frequent maintenance has been a nuisance. There are at least two, and possibly three, different ways known at the present time by which these points could be eliminated. These systems would require a few electronic tubes but that can no longer be considered very much of a hazard for, in so many of the aircraft wrecks where the plane has been a complete washout, the one piece of equipment that can most frequently be salvaged is the radio and its tubes.

New Ignition Systems

New ignition systems are being de. veloped which may eliminate the present high tension secondary leads with their accompanying tendency to leak, have corona breakdown and sometimes even cross fire. These new systems use low tension distribution and step up the voltage at the spark plug. With higher pressures at full loads, and probably leaner mixtures at full and part load, both new spark plug design and higher impressed voltage on the plug points may be required in order to fire the mixture.

Better Spark Plugs

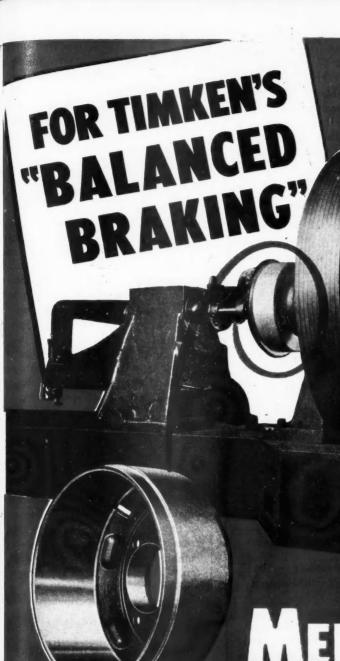
Spark plugs, too, are being developed rather rapidly and progress with electrodes made of platinum and tungsten, some using thorium, too, are now in production. These metals and alloys are used to increase the emissivity, or, in other words, to more easily surround the points with electrons so that the spark might jump across the gap with a lesser impressed voltage. The mechanical design of the plug is also being improved and plugs will now operate for very much longer periods, even with the heavily leaded fuels. As an example of this, a small and what might apparently be assumed to be a comparatively unimportant change in electrode positioning and spacing gave an extension of time between servicing of approximately 10 times or 1000 per cent. Another change permits control of the temperature of the center wire which has been the hottest part of the plug. With these improvements, and others now under development, we may be fairly confident that the spark plug manufacturers will keep pace with anything that the commercial vehicle will require.

Bearing Materials

Bearing materials have been improved tremendously in the past few years under the stress of aircraft development. In today's engines, copper-lead bearings are widely used

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MEEHANITE BRAKE DRUMS

The Timken-Detroit Axle Company, Detroit, Mich., designs and tests axle units to provide "Balanced braking!" Carriot studies of brake linings in conjunction with various brake drum materials have revealed that Mechanite brake drums provide the metallurgical structure required to achieve better resistance to hear checking and scoring—the commonest cause of brake drum failure. This is a result of the uniform, derive structure and wear resistance of the Mechanite and the controlled distribution.

of the finely divided graphite flakes in the matrix of the metal.

Timken Brake Drums are given complete dynamometer tests in the Timken laboratory as shown. This machine permits thorough tests with automatic control and recording of instrument readings. The accumulated knowledge acquired from these tests means better service and lower per ton mile cost to truck owners.

Write for our bulletin "Brake Drums,"

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Остовия, 1944

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GASOLINE ENGINE DEVELOPMENT

(CONTINUED FROM PAGE 126)

both for main and connecting rod big ends. In the latter use, the loading is in the vicinity of 1200 lb. per sq. in. These bearings carry manufacturers' rating of about 3000 lb. per sq. in. Bearing manufacturers are aiming and seem to be fairly confident of obtaining bearings that will handle loads of more than 2000 lb. per sq. in., with the same relative margin between ratings.

Aluminum bearings seem to be potentially capable of rapid development. Silver bearings offer quite a bit in load carrying capacity and it is stated that they will permit extended life of the crankshaft. However, at the present time the silver bearing costs from two to three times that of the best present day copperlead bearing. New methods of manufacture including the plating process may considerably reduce the final

cost of a bearing of this type and if it can be used for greater mileages will certainly be acceptable. In con. nection with the plated bearing, the art and knowledge has progressed rapidly during the war. Special platings of .0005 in. on a bearing can apparently make all the difference between one which will run 100,000 miles or more and failure in a few thousand miles, indicating that texture of the finish as well as compatability of the metals can be a big factor in increasing bearing capacity and life. To date, lead and indium have been the metals most often used in the plating of commercial bearings, but considerable research has been going on with the plating of other metals and much is expected from this research.

With engine speeds increasing, it seems imperative that we keep our piston weights as low as commercially practicable and this seems to point rather definitely to the continued use of aluminum. We know that ring groove wear is sometimes rather rapid when air cleaners are not serviced often but that is a completely separate problem. Aluminum pistons may be produced by new methods or combinations of methods now in use, so that the future piston may come from a machine which will produce a combined forged and extruded piston. These may be both stronger and cheaper to manufacture, even cheaper than the permanent mold casting.

Improvements in Rings

The technique which has been developed in manufacture of aircraft rings will be continued in the production of commercial and passenger car rings. Chrome plating of the compression rings has shown a decided improvement in wear characteristics. It has been found that both the wear on the ring and the wear at the top of the cylinder barrel has been decreased remarkably particularly when some dirt is present. Ring tension and radial distribution of ring pressure studies have been carried on and better sealing and better oil control can be expected.

Valves and Seats

A number of today's commercial engines of comparatively high output (TURN TO PAGE 130, PLEASE

To Keep Your Trucks OUT OF THE REPAIR SHOP for Longer Periods-use



It keeps engines running efficiently and economically — by keeping them PROPERLY and COMPLETELY lubricated, CLEAN, and FREE-RUNNING.

POW-R-FLO eliminates the CAUSES of most engine troubles. It creeps into close tolerance working surfaces and superheated areas. It dissolves gummy deposits and retards the formation of varnish, sludge and carbon. It keeps sludge in suspension in the oil for easy removal by the regular oil filter. It reduces fuel and oil consumption.

ABSOLUTELY HARMLESS to any internal combustion motor, no matter how much is used. Yet small quantities, used regularly, do a real job. Just add it to the gasoline and lubricating oil as directed.

TESTED and PROVED in every type of internal combustion motor. Packed in 2 qt., 1 gal. and 5 gal. cans—also 15, 30, and 55 gal. drums.

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With pleasure, we announce a general price reduction in the entire line of TULSA WINCHES.

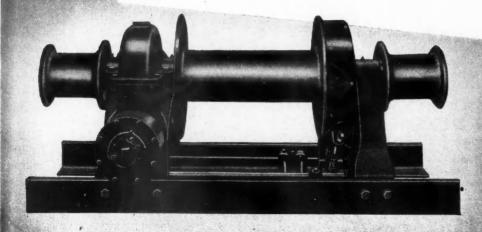
Quality at the lowest possible cost to our customers has always been the bedrock of our policy.

To our customers, we are indebted for the building of our volume production. This volume plus advanced manufacturing methods has made it possible to lower production cost per unit. Our policy is to pass such savings along to our customers.

MANUFACTURING CORPORATION TULSA 3, OKLA.

	Model	Safe Working Load	Approximate Breaking Point	List Price F. O. B. Tulsa
	10	6,000 lbs.	20,000 lbs.	\$145.00
8	12	6,000 lbs.	20,000 lbs.	145.00
	18	12,000 lbs.	45,000 lbs.	185.00
	19	12,000 lbs.	45,000 lbs.	185.00
	21	12,000 lbs.	45,000 lbs.	225.00
	23	15,000 lbs.	53,000 lbs.	245.00
	24	20,000 lbs.	65,000 lbs.	295.00
	28	20,000 lbs.	65,000 lbs.	295.00
	30	20,000 lbs.	65,000 lbs.	320.00
	34	25,000 lbs.	75,000 lbs.	325.00
	36	25,000 lbs.	75,000 lbs.	350.00
	64	35,000 lbs.	100,000 lbs.	400.00
	65	35,000 lbs.	100,000 lbs.	475.00
	70	50,000 lbs.	150,000 lbs.	585.00
	80	65,000 lbs.	200,000 lbs.	775.00

Winch models 10 to 36 inclusive include Power Take-offs and underdrive. Models 64, 65, 70, and 80 are priced with controls only.





GASOLINE ENGINE DEVELOPMENT

(CONTINUED FROM PAGE 128)

have been using the sodium cooled exhaust valve. While the cost of these valves seems, today, to be rather high, methods of manufacture are now being developed whereby the cost can be materially decreased without affecting life. Metallurgical advances in valve steels have progressed so that in engines of moderate output it

may be possible to use more economical plain valves.

Valve seats are being developed which may take care of some small misalignment and eccentricity of the valve or a head which is slightly tipped out of the plane perpendicular to the valve stem. These seats have been tried in some very high output engines and have given a very good account of themselves.

Engine Accessories

Oil pump capacity will undoubt-

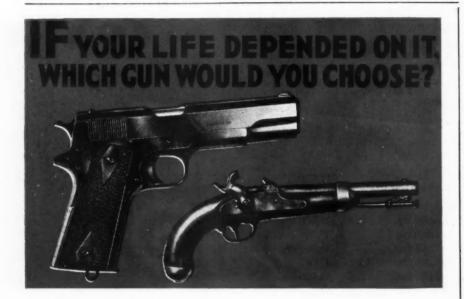
edly have to be increased for with higher bearing loading, as well as higher rubbing speeds, more heat will have to be carried away by the oil and oil may even be used for piston cooling, as it is in a number of today's diesel engines. With this increased load on the oil, filters will have to take a greater part in keep. ing the oil in good condition and will have to do so with little or no attention. The filter that will efficiently service a high output engine will not be just a blown up version of today's filters, for space in the engine compartment is even now at a premium and will continue to be in the future. Filters, along with all other accessories, must improve their efficiency as the engines are being improved so that they will not end up by requiring twice as much space as the engines themselves. Oil coolers must also be considered as they, too, will have a bigger job to do in taking care of the additional heat which higher specific output entails and, despite this higher specific output, we should be able to use the better grades of oil available today.

Carburetors are, and will continue to be, improved to give more accurate and constant mixture ratios with better atomization, in order to facilitate the more even distribution among the cylinders. One way in which this might be accomplished is by adapting some of the characteristics of today's aircraft engine injection carburetion. This same adaptation might readily have an altitude control worked into the design at very little additional cost. This would undoubtedly be a great benefit to those who are operating trucks over mountainous country.

Injection Possibilities

Injection carburetion naturally leads to the possibilities in injection. This may resolve itself into direct, manifold or port injection and appears to offer many possible advantages including that of a supposedly lower engine octane requirement with injection as contrasted to carburetion. We are all cognizant of the effect of heat in reducing volumetric efficiency, yet most engines have an exhaustheated hot spot or a water-heated intake manifold. The distillation curve of the average automotive gasoline has a fairly high end point and, with

(TURN TO PAGE 132, PLEASE)



The old muzzle loader is a gun—by all standards. It will shoot. And it can kill. The only trouble is, sometimes it misses. And often its shots go wild. It's about as deadly at one end as at the other. Now take the modern automatic; with its carefully balanced precision parts, its never-failing accuracy. Yes, you could trust your life to its dependability.

The next time any one tells you that brake linings are all alike—give the lie to that dangerous fallacy. For—while all brake linings are equally good when you don't need them—GRAFILD is the modern lining that never fails!

YOUR Life May Not Depend On The Brake Linings You SELL, BUT YOUR BUSINESS DOES!





OF BETTER MECHANICS CHOICE FOR PRODUCTION AND SERVICE Snap-on revolutionized nut turning with interchangeable sockets. No name in tools means as much in adding speed, precision and safety to every phose of production, maintenance, service.

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GASOLINE ENGINE DEVELOPMENT

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out the addition of this heat, distribution would be very difficult for the wet ends of the fuel must be vaporized to get good distribution. With either direct or port injection, the manifold would have to handle only air and, therefore, can be cold; thereby, increasing volumetric efficiency and output over the entire speed range. Considerable work will, however, have to be done in the development of the necessary controls but when these are worked out we will, undoubtedly, find other advantages which at the moment seem to be of little consequence.

There has been quite a bit of discussion of the possibilities of water injection for commercial engines. This has been a natural result of the use of water injection for momentary bursts of power in combat aircraft engines. Considerable work was done on this problem at Wright Field about 10 years ago, and described by Ford L. Prescott at an A.S.M.E. meet. ing in St. Louis in 1935. At that time, a definite increase in thermal efficiency was noted. This has been corroborated by further testing since then. In commercial engines we do not at the moment know whether other effects may be present such as rapid rusting, increased wear or deterioration of the lubricants. There is much to be done on this problem and the possibilities look inviting. Injection of any type still is too expensive and will have to be materially simplified and reduced in cost to compete with a simple carburetor.

There are a number of design factors each of which will lend its little bit to the final increased performance of the future engine. One possible advantage may be illustrated by Chart 8 (Fig. 8) which shows the effect of timing of the valve events on engine performance. One curve shows a timing to give a torque peak at comparatively low engine speeds, approximately 1000 to 1200 r.p.m.; while the other curve is a typical torque curve of a high speed passenger car type-timing giving a torque peak of approximately 2200 to 2400 r.p.m. These two curves may be combined in one engine by an automatic change in the camshaft timing, controlled by speed so that the final curve of the engine would be a curve shown by the dotted line combining the high torque characteristics of each curve. This will give a much better performing engine on the road.

Supercharging Problems

We now come to the problem of supercharging and the results that we may expect from an engine with an integral supercharger design. It is generally accepted that the roughness of an engine, with a compression ratio increased to take full advantage of the high octane fuel, will be sharper and more objectionable than that of an engine which uses supercharging with a lower compression ratio to take full advantage of this same fuel. Peak pressures alone may cause a more objectionable roughness. And perhaps the difference in temperatures might also be indicative of the difference in life expectancy of the parts exposed to the flame. The octane requirement for

(TURN TO PAGE 134, PLEASE)



The winter of 1944-45 will be the most critical in the history of modern transportation. Irreplaceable motor vehicles (more than three million fewer than three years ago), each an essential unit of transportation, must be safeguarded against accident.

A steamed-up, frosted, sleet- or snow-covered windshield is one of the worst of all driving hazards. The Fulton "44" Electric Defroster provides the best means for maintaining clear vision under all conditions. No electric heat required for keeping space under defroster free from frost on inside of the windshield. Electric heat is used only to melt ice and snow on the outside of the windshield.

Order now. Limited quantities will be available, in both 6- and 12-volt types, under provisions of Limitation Order L-158-subject to our ability to secure the necessary materials and labor for production. "First come first served."

FULTON CO. 1912 South 82nd Street



Valvoline ends sludge and varnish troubles



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When you tear down a motor after 50,000 to 60,000 miles of heavy wartime hauling—you can see what kind of protection your motor oil's been giving you. The clean condition Elgin's Mr. R. C. Muntz reports is characteristic of Valvoline-protected motors, even under the most grueling conditions.

Whether your fleet is large or small, gasoline or Diesel powered, Valvoline lubricants and Valvoline Fleet Laboratory Service can effect definite economies in your operation, and extend the useful life of your equipment. Write today to your nearest Valvoline Office.

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GASOLINE ENGINE DEVELOPMENT

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a typical normally aspirated engine has a tendency to fall off with increase in speed. We may better be able to take advantage of the typical fuel characteristics of the fuels coming from so many of our refineries, both in type and ratio, that we may have little boost at the lower r.p.m.'s and gradually increasing boost as the

speed increases. This would tend to give an engine octane requirement characteristics which would more closely approximate a constant octane requirement. At the same time, this type of boost will tend to increase the horsepower without materially increasing the peak torque outputs, so that the entire drive train from the clutch through the transmission and rear axle would not have to be materially increased in strength and, correspondingly, in weight. Many of the improvements in engine

units will have to be incorporated in this engine, for greater durability and ruggedness will be required due to the increased heat which each part must be able to withstand.

Sodium cooled valves will in all probability be required for the exhaust, perhaps even the intake. Oil cooling of the piston may help to keep it in the correct shape and prevent burning. Necessary in today's engines, adequate cooling of the valve seats and combustion chamber parts will be even more necessary in this supercharged engine. We must have intake ports designed to get a full charge into the cylinder with the lowest restriction, and the exhaust ports designed to get the exhaust gases out into the manifold with as little heat rejection to the water from them as it is possible with normal casting technique. It is every bit as important that we get the aforementioned good intake port design and good valve lift with the supercharged engine as it is with the normally aspirated engine, for every unnecessary fraction of horsepower that is used in pumping is just so much loss and, therefore, so much inefficiency.

We may confidently expect the engine manufacturers to redesign their engines to take advantage of many of the improvements we know are developed today, as well as those still in the development stage.

Fuel in itself, as well as its influence on engine design, will be the most outstanding contributor to higher efficiency and horsepower output.

Supercharging will be used in those operations and territories which require large power units.

The manufacturers of the various component parts will keep up with and sometimes lead the demands of the engine manufacturer. Economics alone will force this for competition will be keen and "the devil takes the hindmost."

END
(Please resume your reading on P. 58)

J. A. Bascle, Jr., has been appointed district man ager for the Louisiana, Mississippi and southern Alabama area, by F. F. Staniford, president of Mack







CARBON DIOXIDE FIRE EXTINGUISHER

Few people think about fighting a fire until they actually face one. That's why it's important that every fire extinguisher operates easily-quickly-thoroughly!

Randolph "4" simplifies, speeds fire-fighting. This modern extinguisher with the "breath of ice" chokes gasoline, oil, paint, machine, electric fires-instantly. Hits the blaze before damage is done!

Approved by Underwriters' Laboratories, Inc. Mobilize against fire with Randolph carbon dioxide protection. For complete details and prompt service, call your supply house, or write us-today.

Easy! So obvious and easy . . . any employee can use it. No valves or hoses to twist—no horns to raise!

7ast! Touch the trigger . . . and powerful carbon dioxide charges into the flames . . . smothers the fire in a penetrating, snowy blanket!

Safe! Does not damage equipment or conduct electricity.

NEat! Randolph carbon dioxide is dry and odorless. Actually disappears after the fire is out. Leaves no foam or liquids to clean up.

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SEND NOW for new, free booklet "Sharpshooting at Flames." Illustrates latest techniques in carbon dioxide fire-fighting.

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Illustration courtesy American Coach & Body Compan

AUXILIARY HEAT



Type UH-5 Hunter Heater. Capacity 15,000 Btu/hr. Pertable or installable.

for Personnel or Perishable Goods Carriers

Hunter Gasoline Fired Heaters are designed to do a specific job of motor transport heating efficiently and safely. There is no exposed flame . . . combustion exhaust is outside of the vehicle . . . they operate

independently of the engine . . . heat volume is controlled from a conveniently located panel . . . They burn any type of gasoline, and burn it economically in proportion to the heat delivered.

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there has heretofore been no satisfactory solution. If you face one of these heating problems, check with Hunter engineers NOW.



Type UH-10 Hunter Heater. Capacity up to 25,000 Btu/hr. Remote controls.

HUNTER AND COMPANY

Transport Equipment

CLEVELAND + OHIO

1560 EAST SEVENTEENTH STREET

DETERMINING CAUSES OF RADIATOR OVERFLOW

(CONTINUED FROM PAGE 49)

bustion gas in suspension in the form of an enormous number of tiny bub. bles that gives the coolant a milky appearance (not to be confused with that produced by soluble oil rust inhibitors). Of course, each tiny bubble displaces a like volume of water, which accordingly goes out the overflow. What is still worse, each tiny bubble will expand more for a given temperature increase than a like amount of water. Furthermore, these bubbles will expand rapidly at the reduced pressures encountered on the suction side of the water pump. Finally, it is obvious that a mixture of air and water cannot absorb and transfer heat as rapidly as the uncontaminated water. It should also be understood that air and combustion gases which are absorbed in the water in solution, markedly increase its tendency to cause rusting.

Except when the entire cooling system is operating above atmospheric pressure, even a tiny leak at the pump seal, hose connection, or even high up on the radiator, altho it may not pass water, can allow air to be sucked into the system. The displaced water fills the space which was designed to allow for the water expansion as it warms up. When this mixture does come up to operating temperature, there is no place for the water to go except out through the overflow tube, even though a pressure cap is used. The pressure increase may become enough to prevent more air being sucked into the system but usually not in time to prevent water loss when the coolant approaches its stabilizing temperature. The pressure cap can be of little help when gasket blowby occurs.

During extensive investigations of radiator and cooling system designs, our laboratories found it helpful to have a method for distinguishing between radiator overflow gas discharge which resulted from gasket or cylinder head blowby, as contrasted with that from atmospheric leaks. This should prove equally helpful to the maintenance mechanic or trouble shooter, for he can save time by not looking for trouble in the wrong place. It was merely necessary to

(TURN TO PAGE 140, PLEASE)



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Every unit in your fleet is a "rolling bill-board"! Companies that sell space on their trucks charge as high as \$240.00 per truck per year. The space on YOUR trucks is of equal value for YOUR OWN USE...and it doesn't cost a cent! Sell your company name, product or service in this FREE space with colorful Meyercord Truck Decals.

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Buy War Bonds-and Keep Them

The Curtiss truck and Ohio Farmer's Dairymen fleet illustrated are typical of the many alert fleet operators using genuine Meyercord Truck Decal decorations.



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It's a matter of LIFE



-how your engine oil

Is your present crankcase oil . . .

DETERGENT? A detergent oil helps prevent sludge and gum formations—helps disperse those already present. It also tends to sharply reduce varnish and lacquer deposits on piston skirts.

Veedol 90 H.D. is a Detergent Oil

DISPERSIVE? A dispersive oil holds carbon, soot, and other finely divided particles in suspension—prevents them from "ganging up" in trouble-making masses. This matter is actually drained out with every oil change, leaving the engine almost factory clean.

Veedal 90 H.D. is a Dispersive Oil

CORROSION RESISTANT? A corrosion

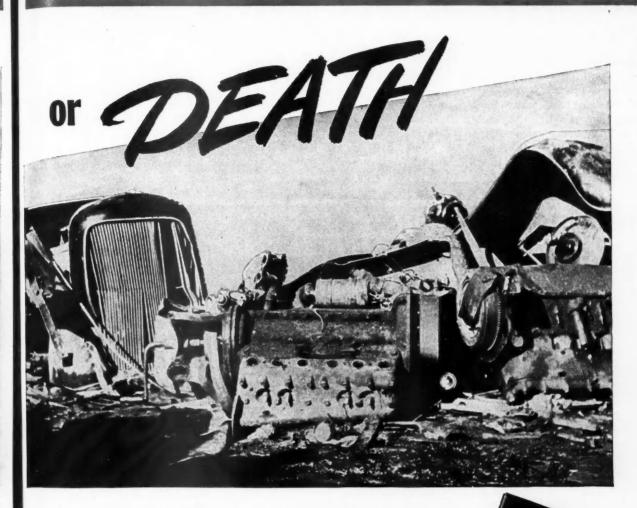
resistant oil protects the newer alloy bearings from the corrosive attacks of compounds that result from oxidation.

Veedol 90 H.D. is a Corrosion Resistant Oil

MOREOVER—Veedol 90 H.D. is made from 100% PENNSYLVANIA CRUDE. The lubricating and wear-resisting qualities of this crude are acknowledged to be unequalled the world over. Veedol 90 H.D. has these advantages in addition to those listed above.

Veedol 90 H.D. comes in S.A.E. 10 to 50. Write us today for prices and delivery information.

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answers these questions:

The Famous Veedol P. M. Plan is waiting for you, too!

The Veedol Preventive Maintenance Plan is doing a whale of a job for over 800 hard-working fleets. It can help yours. The plan can be tailored to fit any number of units—and costs only 18¢ per

truck. Write today for a Tide Water representative to call and go over this *proven* lifeguard for rolling equipment. You can't get started any too soon!

VEEDOL OILS AND GREASES



GASOLINE POWERS THE ATTACK-DON'T WASTE A DROP! . BUY MORE WAR BONDS

DETERMINING CAUSES OF RADIATOR OVERFLOW

(CONTINUED FROM PAGE 136)

couple a sufficient length of light hose to the radiator overflow tube so that the other end reaches into a conveniently located pail, partly filled with water (see sketch). Any substantial and continuous gas discharge will result in a stream of bubbles. These bubbles are trapped in a quart jar or bottle that has previously been filled with water, and inverted in the pail. When filled with gas, the bottle is withdrawn and a lighted match or splint inserted. If the flame is snuffed out quickly, the sample must have come from the combustion chamber, where the oxygen was used up by the fuel. Look for air leaks in the cooling system if the flaming splint continues to burn in bottle containing the gas sample.

If a chassis dynamometer is not available, it is usually desirable to operate the vehicle well loaded on a long steep grade to thoroughly heat the engine; develop peak pressures and insure reasonably complete consumption of the oxygen by the fuel. This is particularly important in the case of diesel engines since their exhaust will contain increasingly more residual oxygen as the engine load is decreased.

It is instructive to time the rate at which the sample collects in the bottle. If blowby occurs in the absence of detonation, a very substantial increase in gas discharge will be evident when fuel knock develops. On the other hand, it sometimes happens that blowby will occur only while severe fuel knock is present.

Only after a careful study of cooling systems by means of transparent radiator connections and windows in radiators, tanks, etc., can it be appreciated how readily entrained combustion gas or air will remain finely dispersed and suspended as long as the pump maintains even moderate water flow rates.

END (Please resume your reading on P. 50)

Lempco Buys Another Plant

James F. Strnad, president of Lempco Products, Inc., of Bedford, Ohio, in suburban Cleveland, has announced that Lempco has purchased the Cleveland Pressed Steel Co., Cleveland. A new addition will be made to the plant in order to start manufacturing a peacetime product which Lempco's experimental department has been developing for the past three and a half years. The acquisition will be operated under its present name in the same location by its present executives.

60 Days for Auto-Lite

Royce G. Martin, president of the Electric Auto-Lite Co., manufacturer of automotive electrical equipment, during a recent meeting of the board of directors, estimated that 60 days at the outside would care for the overall reconversion of Auto-Iite's 22 plants from coast to coast.

McCord Shortens Name

Stockholders of McCord Radiator & Mfg. Co., at a special meeting, approved changing the name of the corporation to McCord Corp.



Check the signboard product and performance
features of the ideal brake lining and you'll see
that Grizzly brake lining is the one to use to raise
your drivers' *Safety Quotient; to make your
equipment perform better...last longer!
Grizzly Manufacturing Company,
Paulding, Ohio. Plants in
Paulding and Los Angeles.





Half-Way Service Won't Do-

Transportation is vital—gasoline, a precious war material.

The surest, most economical way to restore economical performance to Carter Carbureters grown old in service is by using Carter Repair Parts Packages.

Your Carter distributor or jobber will give you full information. Call on him.

CARTER CARBURETOR CORPORATION, St. Louis 7, Missouri

On every fighting front, Carter Carbureters are seeing active service—on jeeps, trucks, and tanks.



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MOBILE MAINTENANCE UNIT IN FRANCE

(CONTINUED FROM PAGE 66)

wheeler was getting a working over by four soldiers. Sergeant Chaney called my attention to the improvised showers the boys had made in one corner of the rack, and by converting some German scrap they had constructed a boiler so they could have shower baths with hot water.

As we entered the shop I was

amazed at the activity. Twenty vehicles including jeeps, six-wheelers, half-tracks and even some German passenger cars were being worked over. I watched a hoist lift a new GMC engine in place while the old one was being boxed for shipment to the Reclamation Depot. This operation was performed by three soldiers who went about the job in a most efficient manner. The engine was dropped into the chassis, ready to be tied down, in only a few minutes.

I met Technical Sergeant Edwin

Knutson from Bemidji, Minn., the platoon sergeant whose crew had replaced this engine. He showed me his mobile shop, a van which is com. pletely fitted with tools and equip. ment for performing all major re. pairs, electrical and mechanical. This shop during static operation is opened at one end of the garage and the mechanics draw their tools from it. The shop has a brake lining machine, a lathe, a drill press, air hoses. washing equipment for small parts, a spark plug cleaner, a generating unit, etc., and several mechanic's and electrician's tool sets.

Work in the garage is done only on job orders. These are cards made by the operations officer and in accordance with his priority. Most of their work, since being in France, has been clutches, front and rear axles and assemblies, transfer cases, engine replacements and transmissions. Work of this kind requires a lot of time, but the record of this organization is a most excellent one.

Cab-over-engine jobs are on the undesirable list. "They are too damned hard to get at," said Sergeant Knutson, "and take too much time in removing the cab."

The old problem of overloading was blamed for increased repair jobs.

"The hoists on these dumps are not in the right place for the overloads that have to be put on them under these conditions, and they break down too often," Sergeant Knutson said.

"The use of governors by the Army," he continued, "is what saves us a hell of a lot of engine jobs. These cowboys get all the speed and power they need, and the governors keep them from 'revving' hell out of the engines."

My tour continued into the forging and welding room, through the paint shops where spray jobs were in progress, the tarp and leather repair section, where a corporal was busy at a sewing machine, and then into Master Sergeant Chaney's office.

"But where is the parts room?" I

"Oh, the parts are kept in the original van which brought them over from the United States to England and then to France. They are kept there in case we have to move quickly," explained the sergeant. "Haven't you seen our warehouse?"

(TURN TO PAGE 144, PLEASE)

Engineered to Keep Vital TRUCKS on the Job All Winter

Keep AMALIE SUB-ZERO in your truck crankcases whenever the thermometer reads below 45°. Then you can depend on easy starting and sure protection against sudden temperature drops ... plus protection against temperature RISES, too! AMALIE SUB-ZERO pours at temperatures as low as 25° below, depending on S.A.E. grade. Yet it gives complete lubrication when the mercury climbs. Back AMALIE SUB-ZERO up with the right AMALIE Winter Grade Lubricants, from spring shackles to differential.

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Utilities, the backbone of modern civilization, have long fortified their service with equipment which, like their own, must not fail. Theirs is a rugged service which calls for the stoutest in men and materials * That this vital industry was among the first to adopt genuine Bendix-Westinghouse Air Brakes and Pneumatic Controls has been responsible for many brilliant chapters in the performance of this world standard of safety, which has just as important a role in your operations * If you would

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IT IS SIGNIFICANT THAT AMERICA'S FINEST MOTOR TRUCK FLEETS ARE EQUIPPED WITH BENDIX-WESTINGHOUSE AIR BRAKES

MOBILE MAINTENANCE UNIT IN FRANCE

(CONTINUED FROM PAGE 142)

I had been in automotive parts business before entering the Army and the warehousing was a phase of the Army in which I had a very personal interest. Sergeant Chaney conducted me across the street and into the old captured German bus which was the headquarters office of the organization. There I met Sergeant

Raymond Knoeble from Minneapolis, who is proclaimed by his Commanding Officer as "the best damned supply sergeant in the Army." Sergeant Knoeble explained how units came to them for parts, how they cataloged their vans with stock record cards, and intelligently answered all my questions by giving me an example.

"For instance," said Sergeant Knoeble, "the Whosit Antiaircraft Battalion needs a clutch-plate for a Ford and a spark plug wiring assembly for a GMC, and the latter is deadlined until replaced. Their runner comes in here with a requisition that the wire set was worn out through 'fair wear and tear.' Now let's follow the path of the runner to get his parts."

We left the office and walked about thirty yards in front of it to a large mobile van marked No. 3. We stepped into the van and it was like stepping between the shelves of any parts warehouse. The walls were sectioned and labeled with parts numbers. We went to the bin marked with the corresponding number on the requisition and pulled out the clutch plate. On the inside door of the van, the soldier in charge took care of his stock record card by deducting one and threw the old clutch-plate into a box. We then left van No. 3 and, after passing up the adjoining van, we entered van No. 5.

Sergeant Knoeble asked the soldier in charge if he had received any wiresets for GMC that day.

"None came in this morning," replied the soldier.

"O. K., Joe," said Sergeant Knoeble, "we'll have to have the shop make it up. This is a burned out job. Will you pull the necessary amount of wire and connectors right away. We'll wait for them."

In about two minutes Joe had gone to his catalog, looked up the model, the connectors required, pulled them from four different bins in his van and handed them to Sergeant Knoeble.

"That's fine," said Sergeant Knoeble. "Now you can put them back. This was only a dry run."

"Are we still having those blankety blank dry runs?" inquired Joe. "I've had those ever since my neighbors selected me. I thought when I left the states that those were all over. Then we had them in England, and now we are at them again. Say, when the hell does this war start?"

We went back to the office and sat down for a smoke, while the sergeant told me about the exchange policies.

"Everything," he stressed, "must be on the exchange basis or the unit supply officer must certify that the part has been worn out through 'fair wear and tear.' Usually the only thing we don't get back is the old tape. And even that sometimes comes back.

"Every couple of days we truck (TURN TO PAGE 146, PLEASE)



UNIVERSAL JOINTS

You get reliable performance and long life when you specify Blood Brothers Universal Joints. All types for all purposes — engineered for smooth, efficient performance with many special features that make Blood Brothers Joints preferred among fleet operators.

Whatever your needs in joints our engineering department will gladly submit quotation.

Backed by over 30 years' factory and field experience

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The SPEED NUT method requires only 3 hand operations as shown in photos above. And only 2 parts are needed instead of 3. Why go through 5 hand operations when only 3 are necessary? Why handle 3 parts when only 2 are required? For an eye opener on the economies of the SPEED NUT system just multiply this 40% motion-saving by the millions of fasteners you use per month. Then add to that the saving by eliminating 1/3 of the parts. Your figures will amaze you. The winning products in postwar competition will be those

that are assembled faster and protected against loosening from vibration. Billions of SPEED NUTS were used before the war and on war products, too. More billions will be used on postwar products. Over 2,000 shapes and sizes. Engineers who move up faster are those who know how to make assembly lines move faster. Write for literature.

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SEE OUR DISPLAY AT THE NATIONAL METAL CONGRESS, SPACE #1-617



*Trademark Reg. U. S. Patent Office

MOBILE MAINTENANCE UNIT IN FRANCE

(CONTINUED FROM PAGE 144)

these exchanges to the Reclamation Depot where they are sorted, worked over and rebuilt, if possible. Then they are sent to one of the supply depots where we draw our parts, and the circle is completed. We draw from the depots by requisition, the units draw from us, we return their old parts to reclamation, they repair

or rebuild them and back to the depot they go. If one depot doesn't have our requirement, we take the requisition to another depot. Naturally, we try to get it at the nearest one.

"Lots of times, there is something we can't get, and the men in the shop make it. In fact, we're the 'makinest' outfit you ever will see. Those fellows can make anything . . . well, almost anything."

I was sure I had found the best place in France to have a vehicle maintained and, as I walked the two miles back to my headquarters, ! regretted more than ever that I had not been assigned to one of those branches whose personnel had vehicles at their disposal. . . . I am assigned to the Transportation Corps!

END

(Please resume your reading on P. 69)

Anderson Joins Edison

Captain Andrew Anderson of the Ordnance Department Reserve. United States Army, has been released from active duty in the New York Ordnance District to become manager of engineering for the Special Products Division of Thomas A. Edison, Inc., at West Orange, N. J.



Henry Ford and Perry Hayden, Te cumseh, Mich., miller, are cooperating on an experiment to demonstrate the truth of a Biblical text concerned with the reproductive powers of wheat in

six years. Four years ago 360 kernels of wheat were planted on Ford's Tecumseh farm. This year the product of this original planting requires a 14-acre field and yielded about 300 bushels. Charles Figy, Michigan Commissioner of Agriculture, predicts that the 1946 yield when the six-year period ends, will be over 100,000 bushels. Henry Ford told Mr. Hayden that upwards to Ford told Mr. Hayden that upwards to 2,000 acres from his extensive Lenawee county farm will be available for the final crop in 1946. This illustration shows Henry Ford standing with Perry Hayden alongside one of the latter's new Fruehauf trailers. In the background is shown a portion of the harvesting operation with equipment from bygone days



Assisting the food for victory program by hauling poultry between Harrison-New York, a Chevrolet 1½-ton cabover-engine truck with special body, operated by the Thacker Produce Co., has piled up a total of more than 540, 000 miles since it was placed in this service in May, 1940. Strict observance of wartime driving regulations is credited, in a large measure, for the splendid performance of the truck and its present excellent condition



SEE HOW Graf Flox ELIMINATES SCORING - SEIZING - SCUFFING

★ Now, microscopic photography permits you to SEE why Burd "Graf-Flox" Piston Rings are self-lubricating and non-abrasive . . . why they do not score, seize or scuff. Independent research laboratory photos reveal how Burd electric furnace iron assures each ring scientifically controlled tension and uniform distribution of natural graphite . . . how an exclusive Burd process completely removes abrasive metal particles . . . how a special "Graf-Flox" method applies deeply penetrating colloidal graphite. These microphotos show the reasons why Burd "Graf-Flox" Piston Rings add many miles of life to the motors of today's so vitally needed cars and trucks.



ard electric furnace iron has uniformly natural graphite. grinding particles are eliminated. Deeply penetrating colloidal graphite is applied.



See poorly distributed carbon deposits in ordinary cupola-iron rings. Note abrasive metal particles on ring surface, which cause trouble in cylinders.

BRINGS THESE ADVANTAGES TO BURD PISTON RINGS

- Quick Seating . . . No Run-in Needed
- * Non-Abrasive ... No Danger of Scuffing
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- * Prevents Rings Sticking in Grooves
- * Adds Life to Rings and Motors



D'Graf Flox PISTON RINGS

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You get reliable performance and long life from your AC Fuel Pumps because the quality is built in, from blueprints to finished products. You will best protect that performance and durability if you install AC Authorized Factory Rebuilt Pumps (when replacement is necessary), or rebuild your present pumps with AC Diaphragm or Parts Kits.



8 REASONS WHY AC PUMPS AND PARTS ARE SAFEST

- Careful control of pressure and flow assuring correct fuel supply.
- Accurate hardening, precision machining of parts essential to long life.
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- High, and controlled, pin hardness.
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Gentlemen: Please send at once, no charge, the AC Shop Manuals checked:

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Instruct Your Drivers How To Increase Tire Chain Mileage

This year's limited supply of new TIRE CHAINS, plus all the old CHAINS now in use, will not be sufficient to meet even essential transportation requirements unless the service-life of every available set is greatly extended. You can help to materially increase TIRE CHAIN mileage, as well as save critical steel for Victory, by instructing your drivers to observe the following simple rules for TIRE CHAIN conservation:

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- . Drive Slowly On Curves
- Don't Drive Over Bare Pavements
- Don't Crush Chains Against Curbs
- Don't Use Them for Tow Chains
- Inspect Frequently . . . Repair
 Promptly
- Clean and Dry Chains Before Storing

As further TIRE CHAIN conservation measures, ask your Supplier how to use *old stock* and *odd sizes*; and keep repairing old sets as long as they can be made fit for further service.



McKAY TIRE CHAINS ARE DISTRIBUTED THROUGH JOBBERS

FILTER CARTRIDGE DIAGNOSIS

(CONTINUED FROM PAGE 39)

plier can arrive at a schedule of operation best suited to his requirements.

- 2. Filters are useless and uneconomical for operations where engine temperatures are always very low and where blowby is always excessive.
- 3. Filters cannot cure faulty engine adjustments.

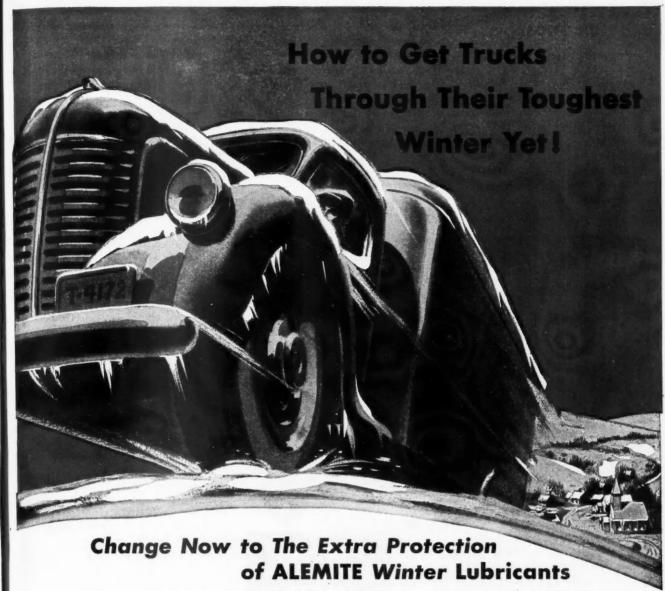
Observations

The oil chemists tell us that if we had a magnifying glass powerful enough, we could see that an oil film is a mass of countless, tiny particles called molecules which are shaped like balloons. Each molecule is composed of about 85 per cent carbon and 15 per cent hydrogen. However, when subjected to scorching engine heats and exposed to combustion gases, chemical changes or "breakdown" occur and oxidation proceeds to form asphaltenes, resins, and oil acids as well as various intermediate oxidation products. The asphaltenes are of interest to us because as they accumulate in the oil, oxidation proceeds at an accelerated rate. We might liken this to the case of the bad apple spoiling a barrel of good apples, and our problem is to get rid of the asphaltenes—the bad oil apples. Asphaltenes are formed in all oils regardless of the crude oil base or the refining process.

One of the sources of asphaltenes and resins, or lacquers, which we frequently overlooked in dilution are unburned heavy ends of the fuel. Crankcase oil usually contains a small amount of dilution; the amount varies with the outside air temperatures, with the engine, its condition, and its service. Since unburned fuel has been subjected to the blast furnace temperatures of combustion, it is highly oxidized. A sample of normal crankcase dilution which was perfectly clear when distilled from the crankcase oil developed a varnish-like or resinous deposit after standing about two weeks. This deposit resembled the varnish deposit frequently found in pistons.

Abrasive materials can quickly sabotage the finest engine and their quick removal is an absolute essential if long engine life is to be obtained.

(TURN TO PAGE 150, PLEASE)



Your trucks have gone through a super-hot summer. They're another season older. And now your trucks face the ruinous cold of winter. Regardless, your trucks must take it.

They've got to stay on the job. The way to guard hard-to-get parts and the difference between life or death for your trucks is Alemite Winter Lubricants! Change Now!



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ALEMITE GEAR LUBRICANTS

Risking gears this winter means risking a whole truck and your business. Alemite Winter Gear Lubricants withstand extreme cold and pressures and still protect hard-working surfaces regardless of conditions. Change now and save a truck!



ALEMITE "Sub-Zero" LUBRICANT

Guard vital chassis bearings against cold-weather friction with Alemite Sub-Zero Lubricant. Unlike ordinary grease which actually creates friction in cold weather, Alemite Sub-Zero Lubricant stays on the job at temperatures down to 40° below!

ALEMITE WINTER MOTOR OIL

Around the clock operation wears out ordinary oil fast. Zero weather increases the risk. Alemite Winter Motor Oil—made from 100% pure Bradford Pennsylvania crude stock—will stand up under severest driving conditions. Available in all S.A.E. winter grades.

Call in the Alemite Lubrication Spe-

cialist to explain his modern lubrication set-up for greater protection this winter. If you cannot locate him, write for his name and address.

Alemite, 1876 Diversey Parkway, Chicago 14, Ill., or Belleville, Ont.



SEND FOR FREE BOOKLET

This booklet, "Alemite Industrial Lubrication Manual," answers many questions on lubrication and care of your equipment. Filled with down-to-earth facts about lubricants and lubricating equipment. Illustrated and written so even the newest help can understand.



ALEMITE

First in Modern Lubrication

LUBRICANTS . EQUIPMENT . MAINTENANCE . ENGINEERING . CONSULATION



Остовев, 1944

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FILTER CARTRIDGE DIAGNOSIS

(CONTINUED FROM PAGE 148)

A large oil company found that there was enough abrasive material in a single crankcase drain (without a filter) to make friction stripe for 2300 packages of matches. Efficient air cleaners have done much to reduce the amount of abrasives entering the combustion chamber through the carburetor. But, as long as en-

gines are built with ventilating pipes, oil filler pipes, and other non-protected (or carelessly left open) holes; as long as wear takes place in engines, and as long as careless mechanics fail to exercise meticulous cleanliness in rebuilding or repairing engines, the oil filter will be the prime factor in abrasive removal.

The introduction of detergent and/ or heavy duty oils has changed filtering requirements. Comparative spot tests of mineral oil and of heavy duty oil illustrate this point. The engine contaminants in mineral oil form relatively large-sized particles which are easily filtered whereas the engine contaminants in heavy duty oil are finely diffused, and are kept from coagulating by means of detergents.

Photomicrographs of the used oils and of the bottom filter fibres give an even better understanding of the differences. In the mineral oil the dirt is shown in clusters, but in the heavy duty oil, each individual dirt particle stands out by itself like stars on a moonless night. Another difference is that the engine dirt slowly settles out of mineral oils but seems to be permanently suspended in the heavy duty oils.

Blowby is one of the worst offenders for fouling engine oil and loading oil filter cartridges. Blowby is excessive when engine temperatures are low, when ring gaps are temporarily aligned, or when ring sticking occurs. During blowby fuel soot, unburned fuel, combustion chamber deposits, exhaust gases, and water vapor from combustion are blown down past the rings into the crankcase.

END

(Please resume your reading on P. 40)

Pharis Tire Expands

An extensive expansion program for the Pharis Tire and Rubber Co., Newark, Ohio, involving the expenditure of more than a half million dollars, is announced by Furber Marshall, president.

The plans were announced after the Pharis company sold, privately, to the Mutual Life Insurance Company of New York, a four per cent loan in the amount of \$1,000,000.

"Approximately \$450,000 of the proceeds will be used to repay bank borrowings incurred in the acquisition of Molded Materials, Inc., at Ridgway, Pa., and the Carlisle Tire and Rubber Co., at Carlisle, Pa.," Mr. Marshall said.

The Molded Materials division of the Pharis company was acquired several months ago as part of an enlarged production program for the manufacture of brake lining for passenger cars and trucks. The Carlisle company will increase tube production of the Pharis organization.

"Plans are now in the making for additional plant and warehouse facilities as part of our post-war program," Mr. Marshall said.



UNCLE SAM'S GREAT GUNS, worn out by many discharges, are rebuilt "as good as new" by replacing the old barrel with a new one. "Lost Efficiency Restored" through skillful engineering.

On a smaller scale, but representing equal skill, worn out Carburetors and Fuel Pumps are quickly reconditioned with Hygrade Replacement Parts.

Not "duplications of the originals" but parts made to new tolerances, to compensate for wear. Mechanics who rebuild with Hygrade Parts must turn out a successful job. Lost efficiency is restored 100% because Hygrade Parts are engineered for old units—and as a result, fit perfectly!

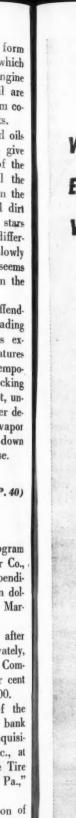
HYGRADE PRODUCTS: Replacement Parts for Carburetors, Fuel Pumps and Shocks; Speedometer Cables, Tips and Casing; Fuel Lines and Fittings.

HYGRADE PRODUCTS CO., INC. 35-35 Thirty-fifth St., Long Island City 1, N. Y.

HYGRADE
REPLACEMENT
PARTS
FOIR
CARBURETORS
& FUEL PUMPS
INSURE A
SATISFACTORY
'JOB—
Theyire
ENGINEERED
Foir
OLD UNITS



HYGRADE



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OCTOBER, 1944

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QUIZ ANSWERS

CCJ Quiz on Page 69

1. c. New Guinea. "Little Detroit," as our soldiers would tell you, is the GI name for an assembly line that has been set up in New Guinea for the repair of military vehicles. Over 5500 trucks and cars have been put back into operating condition there.

2. a. Gen. Deane ranks trucks first, and attributes much of the credit for

the Russian advance in Poland and the Baltics to American trucks. Lendlease trucks make up about half of the Russian Army's transport.

- 3. a. Octagonal = (4) Stop
 - b. Round = (1) R.R. Crossing
 - c. Diamond = (2) Slow Down
 - d. Square = (3) Information
- 4. b. On the outside, especially if the equipment operates over crowned roads. Otherwise, the outer tires go along just for the ride.

5. a. In general charge of driver training is Brig. Gen. W. R. McRey. nolds. One out of every four soldiers handles some kind of motorized equipment at one time or other. About a million soldiers have already gone through the Army's stiff driver training, and another million may complete this instruction before the war ends.

6. a. It's true, proving that while an army might march on its stomach, it rides on its gas tanks... and ours is the "ridingest" army that ever was.

7. b. Iowa has classified jeeps as "commercial vehicles," subject to truck license laws. The cheapest license costs \$15, and the jeep may be operated up to 3 tons gross weight.

8. a. A "crab" happens to be a minesweeper on land. It's a Gen. Sherman tank that is equipped with a steel cylinder and a number of lengths of chains. When the tank moves forward, the cylinder revolves and the free ends of the chains beat the ground with a flailing action, exploding both anti-personnel and antitank mines.

9. d. Just one of those tires would set you back \$750. Such a tire holds as much air as 25 auto tires and takes 20 minutes to inflate.

10. Here's a list of 10 uses for lead around a truck . . . just in case you got stuck around number three.

- 1. In the paint and enamel
- 2. In the glass of the electric light bulbs, to give clearness
- 3. In the gasoline, if you're lucky enough to get tetraethyl lead
- 4. In the solder . . . used quite a few places
- 5. For connecting rod bearings . . . of babbitt metal
- 6. In the fuses
- 7. In the tires . . . lead sulphate is a hardening ingredient
- 8. In the porcelain of the spark plugs
- 9. As a plating on leaf springs
- 10. In the window glass

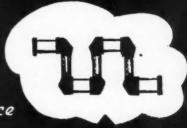
And you may have thought of even more than that.

END (Please resume your reading on P. 76)

INDIUM...

PUTS PROLONGED LIFE INTO BEARINGS

By Increasing
Wear Resistance
and
Corrosion Resistance



Diffusion of small amounts of INDIUM into the contact surface of the bearing metal is bringing about some remarkable increases in bearing life. And this increase is taking place in many types of

engines...aviation, auto and Diesel.

This treatment produces a relatively high concentration of INDIUM alloy at the point of wear. It produces a surface much harder than either INDIUM or the bearing compound. It decreases friction and increases the resistance both to mechanical wear and to oil corrosion.

INDIUM is also used for plating non-ferrous parts where a harder surface and high finish to microspecifications are required.

Our research staff will be glad to outline the possibilities of INDIUM as they relate to your problems.



THE IN CORPORATION OF AMERICA

New York Office: 60 East 42nd Street, New York 17, N. Y.

WORKING ON THE GUADALCANAL, BOUGAINVILLE & TOKIO WHERE DEPENDABILITY REALLY COUNTS

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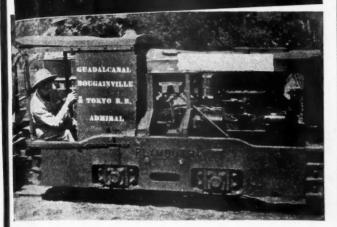
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P. 76)

DURNAL



• Railroading is rough and tough on the G. B. & T. Sturdy dependability in equipment is a most blessed—and most needed—characteristic. And there, on the army service force rail line in the South Pacific islands, gasoline-powered Plymouth locomotives are equipped with Pierce Governors.

Guadalcanal, Main Street or National Highway, the need for a long ratio between operating hours and necessary maintenance hours is the same.

Durable, positive, mechanically dependable Pierce Flyball Governors can and will give substantial assistance in adding extra profitable operating hours between maintenance and repair shops. Without interference in power output under load, Pierce Governors give unfailing control to a desired maximum speed—and protection against runaway and abuse.

Pierce Governors are standard equipment on many popular engines. Specify them on the new units you'll be buying—and write for full information and the new Pierce catalog if your present engines are not Pierce-equipped.

PIERCE

THE PIERCE GOVERNOR COMPANY, INC.
161: OHIO AVENUE . ANDERSON, INDIANA

Manufacturers of Pierce Precision Governors and Sisson Automatic Chokes

Canadian Manufacturer and Distributor: BURLEC LIMITED, Toronto 13, Canada

Preventive maintenance

begins on a GLOBE HOIST



Today—more so than ever before—your fleet of vehicles must be kept fit.

More revenue miles—more service is expected, regardless of age of vehicle.

More frequent inspection—unit overhaul is required to preserve your critical wearing parts.

The biggest percentage of such work calls for access to the underside of the vehicle.

Manpower is scarce—so employ the GLOBE Universal Truck Hoist to save time—and enjoy accessibility quickly and with safety.

GLOBE HOIST COMPANY Des Moines 6, Iowa

Des Moines 6, Iowa Philadelphia 18, Penna.

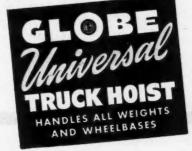


Used as a Front End Lift



Single post used for short-wheelbase Trucks or Automobiles

Globe Universal Truck Hoists— Wheel Dolly and Portable Pit Lifts—are available on W.P.B. limitation order L-270 to essential fleet operators.



Metal Cleaning Firm Formed

The Optimus Equipment Co., Matawan, N. J., has been organized to design and manufacture a line of equipment for metal washing, rinsing, pickling, tumbling and drying operations. The company will introduce a number of standard models for general metal washing use in production, maintenance and repair work. The company will function in close affiliation with the Hanson-Van Winkle-Munning Co., also of Matawan.

Highway Trailer Models Include Innovations

According to a handsome new fullcolor catalog just issued by Highway Trailer Co., Edgerton, Wis., new Highway "Freightmasters" and

"Clippers" will include several innovations that are destined to meet with hearty approval among trailer operators.

Because braking power is increasingly important under today's heavier trailer loads, Highway has given special attention to stepping up brake efficiency on both the new models. Instead of being 4 in. and $5\frac{1}{2}$ in. wide as formerly, the new Highway brake measures $5\frac{1}{2}$ in. and 7 in. in width, with a diameter of $16\frac{1}{2}$ in. "More square inches of braking surface means reduced pressure per square inch," states the catalog, with "longer life, smoother braking and less heating."

New Highway radius rods are heat treated steel forgings. They are full swiveling and easily adjustable for micrometric alignment, with a bronze bushing at the upper end and a rubber bushing at the lower.

On a page devoted to body features, the new body frame and roof bow construction comes in for prominent mention, with detailed drawings and descriptions of the new Highway flanged steel stakes, gusset plates, and countersunk rivets. Pressed steel stakes with flanged channel section, reinforced at the rubrail with a new type gusset plate, riveted and welded to rubrail combine to achieve a new degree of rigidity, according to Highway engineers.

By ingenious planning, countersinks in body panels and stakes are nested together to give an increased anti-stress factor, with rivets countersunk so they are flush with outside of body. New Highway refrigerator vans now added to the line offer protection for loads requiring lower temperatures than those protected by the conventional insulated van.

Production of new Highway "Clipper" semi-trailers is already under way. Copies of the new catalogs are available on request, which should be addressed to Commercial Sales Division, Highway Trailer Co., Edgerton, Wis.





moothness is the thing

Bower Roller Bearings in tractors defeat friction through surface smoothness refined to millionths of an inch-the highest degree of precision known to the bearing industry.

BOWER ROLLER BEARINGS



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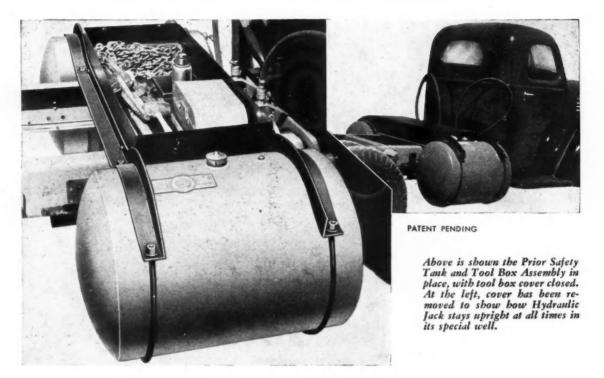
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BOWER
ROLLER BEARING CO.
Detroit 14, Michigan

PRIOR Safety TANKS FOR TRUCKS



*Prior Safety Tank and Tool Box Assembly, with Special Well for Hydraulic Jack, Is a Cost-Cutting Combination For One Truck or a Fleet

• When you add Prior Safety Tanks to your trucks, you increase operating efficiency by making possible the purchase of fuel in large quantities from your cheapest source, and eliminate frequent refueling stops on long runs. The exclusive curved angle iron suspension, and the Prior adjustable side mounting brackets (for single tanks) provide 3 inches greater road clearance.

All Prior Gasoline Tanks are cylindrical, with dished heads for extra strength; are made

of 12-gauge steel, pickled and oiled to prevent scale and corrosion; are 100 per cent electrically welded; pilfer proof, and equipped with fusible alloy plug to prevent explosion in event of fire.

The exclusive Prior Tool Box feature provides sturdy, spacious tool storage, and a special well in which the Hydraulic Jack always stays in an upright position. The box may be securely locked.

PRIOR PRODUCTS

DALLAS, TEXAS
CLINTON, ILLINOIS

Wire Us for Name of Nearest Dealer and Complete Information

PILFER PROOF . FEWER STOPS FOR FUEL . MORE FIRE PROTECTION

FORMULAE FOR SELECTING TRACTORS

(CONTINUED FROM PAGE 48)

inch-pounds maximum torque per cubic inch of piston displacement. This figure is the result of averaging the maximum torque output and the cubic displacement of about 75 engines of varying sizes and manufacture. All of these engines are in current use. In individual engines the ratios range from 8.25 inch-pounds to 9.50 inch-pounds with an overall average of 9.05 inch-pounds. For engines of over 300 cu. in. displacement the overall average was 8.98 inch-pounds.

It also developed that the average four-wheel (two-axle) tractor weighs about 20 lb. for each cubic inch of piston displacement. Again this figure is merely the average of a number of makes and models. In individual models it varies from about 17.5 lb. to as high as 22.8 lb., but strikes an average at a fraction over 20 lb. of tractor weight per cubic inch of displacement.

Hence, if we accept the rule of one cu. in. displacement per 100 lb. g.v.w., and if the tractor weighs 20 lb. per cu. in. displacement, then, obviously, the tractor weight is quickly established at 20 per cent of the g.v.w. Actual checks of operating units indicate that this percentage is sufficiently accurate to be acceptable.

For several years just prior to Pearl Harbor two arithmetical formulae were being accented and given considerable weight by truck operators and manufacturers. These factors were "Tractive Effort" and "Grade Ability." In my opinion both of these formulae are of some value so long as they are recognized merely as functions or ratios wherein torque, gear ratio, tire size and gross vehicle weight are equated. In other words, they permit comparison of anticipated performance of one vehicle against another.

The formulae are:

$$TE = \frac{T \times FGR \times .90}{RR}$$

$$GA = \frac{TE \times 100}{GVW} - 1.20$$

Or combining the two we get:

$$GA = \frac{T \times FGR \times .90 \times 100}{RR \times GVW} - 1.20$$

TE = Tractive Effort

GA = Grade Ability

T = Torque, in inch-pounds

FGR = Final Gear Ratio

.90 = Mechanical Efficiency Factor

RR = Rolling Radii of Tires

GVW = Gross Vehicle Weight

1.20 = Rolling Resistance of 20 lb. per ton.

Referring to and accepting as a premise that one cubic inch displacement equals 100 lb. g.v.w. and that nine inch-pounds torque equals one cu. in. displacement, then nine inch-

pounds torque equals 100 lb. g.v.w. or .09 times g.v.w. equals torque in inch-pounds. So, substituting in the Grade Ability formula, we get:

$$GA = \frac{.09 \times GVW \times FGR \times .90 \times 100}{RR \times GVW} - 1.20$$
or
$$FGR \times 8.10$$

Inasmuch as most calculations involve larger units, where axle weights will go up to 16,000 lb. or over, it is (TURN TO PAGE 160, PLEASE)

RR

BUY
WAR BONDS
Jor the Juture safety of our land

Buy Gerodo for Road Safety



FERODO AND ASBESTOS, INCORPORATED, NEW BRUNSWICK, N. J.

JRNAL



TO GET GOOD TRUCK TIRE PERFORMANCE

DO IT RIGHT THE FIRST TIME

of to

Here's how!

First, be sure you have these necessary materials on hand:

- 1. Wire brush for cleaning rims.
- 2. Paint brush, 1 to 11/2 inches in width, or cloth.
- 3. Soapstone, talc, or mica in shaker can or tied in cheese cloth sacks.
- 4. Vegetable oil soap.

LUBRICATE

UNITED

Mount Tires Correctly!

At any time and all the time, proper mounting of truck tires, tubes and flaps is a "SHOULD" for profitable operation.

Now in wartime with Synthetic tires, tubes and flaps, it is an absolute "MUST"

Any way you do it, mounting tires takes a certain amount of work. Why not do it right the first time?

Mounting truck tires the right way takes only just a little more work, a little more time, a little more material. And you get a LOT MORE MILES per tire.

Mounting tires the wrong way still takes work, is bound to make you more trouble in the end, and cuts tire life and mileage way down.

Now, follow these steps:

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- 1. Make vegetable oil soap solution. Mix one pound of soap with *one-balf* pint of water. Stir well and stir again every time before using. You can estimate a pound by taking one-fifth of contents of 5-pound can, etc.
- Clean rim thoroughly, especially inside of flanges, preferably using wire brush. Straighten bent flanges, take out dents, etc.
- Inspect inside of tire, remove dirt, stones, etc., and dust thoroughly with soapstone, talc or mica. Remove any excess of soapstone.
- Inflate tube until just rounded out. Dust with soapstone. Insert in casing.
- 5. With paint brush or cloth, apply vegetable oil soap solution on inside of beads and that part of tube between beads. (With passenger type tires, also apply solution on outside of beads so that casing will slip easily over rim flanges.)
- 6. Next insert flap in casing. The lubrication on the inside of beads and on tube will permit wings of flap to slip into position between the tube and the shoulders of beads.
- Apply soap solution evenly on the flap between the beads.
- 8. Mount casing on rim in regular way.
- Inflate to full recommended pressure, until tire beads are seated.
- 10. DEFLATE, preferably by removing valve core.
- 1. RE-INFLATE to recommended pressure.

WHY all the special care?

Because un-lubricated tubes and flaps will "freeze" to the casing and will not slip down against the rim into their proper positions during initial inflation. When this "freezing" occurs, the tube and flap are subjected to abnormal stretching and are likely to crack and split. When this happens, costly, premature failure results.

When tire, tube, flap and rim are all properly assembled:

- 1. The beads fit snugly and firmly on the rim.
- 2. The flap lies evenly and smoothly against rim and against inside of beads without strain or distortion.
- The tube fits uniformly and without excessive stretching.
- 4. The entire assembly is perfectly put together and each part can efficiently perform the particular work for which it is designed.

IMPORTANT NOTE: When tires are used on wide-base rims it is necessary to equip with the next larger size tube in all sizes up to and including 9:00 in accordance with Tire & Rim Association recommendations for both rubber and synthetic tires. The larger synthetic tube is particularly required because of its lower stretching qualities. A wider flap is required also with all sizes of tires when installed on wide-base rims.

Your U. S. Truck Tire Distributor can supply you with "U.S." Vegetable Oil Soap and "U.S." Soapstone.



NFLATE . DEFLATE

TE · DEFLATE · RE-INFLAT

Listen to the Philharmonic-Symphony program over the CBS network Sunday afternoon, 3:00 to 4:30 E.W.T. Carl Van Doren and a guest star present an interlude of historical significance.

SERVING THROUGH SCIENCE



FOR GREATER TRUCK TIRE MILEAGE

STATES RUBBER COMPANY

1230 SIXTH AVENUE . ROCKEFELLER CENTER . NEW YORK 20, NEW YORK

FORMULAE FOR SELECTING TRACTORS

(CONTINUED FROM PAGE 157)

to be assumed that tire sizes will range from 10.00×20 tires (carrying capacity of 4000 lb.) upward. An average of the rolling radii of the eight tire sizes from 10.00×20 to 12.00×24 produces an average radius of 21.1 in. True, the radius of a 10.00×20 is 19.7 in. and that of a

12.00 x 24 is 22.7 in., still I have worked on averages thus far so will carry on on that basis.

So, substituting the average rolling radius in the above Grade Ability formula, we get:

$$GA = \frac{FGR \times 8.10}{21.1} - 1.20$$
or

 $GA = (FGR \times .384) - 1.20$

Thus, a 40,000-pound g.v.w. combination unit with a 400 cu. in. en-

gine and a 7.50:1 rear end will show Grade Ability of 1.68 per cent. Let us compare this result with an actual case of a 40,000-lb. g.v.w. unit powered with a tractor of standard manufacture having a 408 cu. in. engine, 3504 inch-pounds maximum torque, 10.00 x 20 tires and a 7.56:1 rear end. Grade Ability computed by the formula on these specifications proves to be 1.82 per cent.

In the case of a 50,000-lb. g.v.w. unit with a 500 cu. in. engine having 4500 inch-pounds torque and a 6.50:1 rear end, by the abbreviated formula Grade Ability equals 1.29 per cent. To compare the same g.v.w. having a tractor of standard make having a 510 cu. in. engine with 4584 inch-pounds maximum torque, 11.00 x 20 tire and a 6.76:1 rear end, Grade Ability equals 1.32 per cent.

Old Rule Workable

It all seems to prove that there is merit and reason to the rule of one cu. in. per 100 lb. g.v.w. Furthermore, it would seem advisable to lean toward the larger engine if in final selection there is a choice of two engines, one under and one over the base of one cu. in. per 100 lb. A paper recently read by Mr. Bachman before the Pittsburgh section of the SAE recites the results of comparative runs of 40,000-pound g.v.w. tractor-trailer unit in Pennsylvania. On one run the unit was powered with a 377 cu. in. engine and a two-speed axle of 6.53 and 8.53:1 ratio while on another run the power unit had a 501 in. engine and a 6.77:1 rear end. Both runs were 570.7 miles. The gasoline consumption on the two trips varied by only .55 gal. in favor of the smaller engine while the larger powered unit made the trip in 2.78 hours less time.

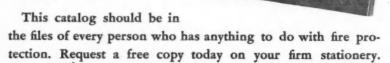
It is also of interest to note that in four-wheelers carrying the load on their backs that the ratio of displacement to g.v.w. is approximately 1½ cu. in. per 100 lb. and that the chassis weighs about 20 lb. per cubic inch displacement. In the case of sixwheelers with the load on their backs, the ratio is approximately 1 cu. in per 100 lb. g.v.w. with a chassis weight of about 30 lb. per cu. in displacement.

END

(Please resume your reading on P. 49)



This new catalog, just off the press, pictures and describes the complete line of DUGAS hand and wheeled extinguishers and accessories. It explains the effectiveness of patented PLUS-FIFTY DUGAS Dry Chemical, the extinguishing agent, and the ten important DUGAS features.



District Offices and Distributors in all important trade centers.

DUGAS ENGINEERING CORPORATION, MARINETTE, WISCONSIN OWNED AND OPERATED BY ANSUL CHEMICAL COMPANY

EXTINGUISHING

EQUIPMENT



In the Navy, and in the Army, the LANAGAN DISTRIBUTOR TESTER has a real rating. It accurately diagnoses the electrical and mechanical action of the distributor and shows the need for adjustment or replacement with reference to point action, adjustment, and wear. It takes the guesswork out of repair work, and helps make

Before very long LANAGAN TESTING EQUIP-

engine performance more dependable.

MENT will be available for your shop. It will help you pitch into the tremendous post-war repair-shop business and do faster, better work. Send for catalog now to help you plan for tomorrow.

KEEP ON BUYING WAR BONDS ... AND KEEP THEM



LANAGAN AND HOKE

PHILADELPHIA 44, PENNA.

PRECISION AUTOMOTIVE TESTING EQUIPMENT

Остовея, 1944

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OURNAL

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No. 33rd St.

PITTSBURGH 13, Pa., Point Spring Co., 419 Melwood St.

The shortage of skilled mechanics and the need of keeping trucks and buses in top running condition, makes the modern spring service maintained by your Rowland Distributor especially helpful. He knows springs thoroughly and how to make them deliver a full lifetime of service. He is ready to serve you regardless of the make of springs you are now using. This Rowland Spring service is used by hundreds of fleet operators to catch spring troubles before they occur, reduce operating expense, cut road delays and lengthen spring life. Use your nearby Rowland Spring distributor for SPRING, muffler, universal joint and wheel suspension service.



FRANKFORD.

SPRINGS: MUFFLERS . WHEEL SUSPENSION PARTS . UNIVERSAL JOINTS

150th ANNIVERSARY OF AMERICA'S OLDEST LEAF SPRING MANUFACTURER

ODT Director Sees Fourth Ouarter Tire Shortage

With many trucks and buses down all over the country, the severe short. age of heavy-duty truck and bus tires for replacement purposes will continue through the fourth quarter of 1944 and a spread of the tire shortage to the smaller size truck tires is in prospect, according to Col. J. Monroe Johnson, director of the ODT.

Colonel Johnson said fourth-quarter tire allocations by the War Production Board for October, November and December were far below basic requirements on tires in sizes 8.25 x 20 and up. Because of its decision to satisfy expanded military requirements the WPB, in acting upon an ODT appeal from the unsatisfactory civilian allocation, increased the heavy-duty allotments only slightly and made a drastic cut in the smaller size truck tire allotments,

The resulting deficit in smaller size tires will affect principally farm trucks and those used in making deliveries of milk, bakery products, laundry and in performing many other essential services, the ODT director said.

"The volume of tires remaining for replacement purposes will permit rationing at the rate of only 96,832 tires in sizes 8.25 x 20 and larger per month," Colonel Johnson said. "This level is but slightly more than onehalf of the estimated requirements of 189,599 such tires needed to restore essential motor services to the approximate volume actually supplied during the first six months of 1944."

"The 96,832 heavy-duty tires that can be made available through the rationing system each month during the fourth quarter fail by a substantial margin to satisfy replacement requirements of the services rated with top priorities 1 and 2 in the War Production Board and War Food Administration Essentiality List."

The ODT director said that after meeting new vehicle program needs, the fourth-quarter allotment of tires in the 7.50 x 20 and smaller sizes will provide 251,052 tires monthly in these sizes for replacement purposes or enough to supply only 72.7 per cent of the requirements of essential operators. These estimated requirements were placed at 345,272 tires monthly.

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TRN

Model No. 204



Model No. 254



Model No. 244



Model No. 238



Model No. 248

K-D OFFERS

THE COMPLETE LINE

OF STOP AND TAIL REPLACEMENT LAMPS



JUMBO STOP LAMP—No. 254-F—Refracted letters on extra large, 7" red or amber lens offers long-range vision. Heavy cork gaskets give positive protection against dust and moisture. Obtainable for flush or bracket mounting, this superior Stop Lamp is economical, durable, dependable.

This is a sample of the thoroughness with which K-D covers lighting needs. In Stop and Tail Lamps alone K-D offers 14 different models for buses, trucks and passenger cars.

But it is not enough that K-D produces a wide variety of equipment. Complete lighting satisfaction can be achieved only by unexcelled quality and dependable service. K-D's skilled designers have accomplished this with precise highway engineering to assure maximum safety and visibility; long, trouble-free service; simple installation—all at minimum original and maintenance costs.

When you need safer, surer, better lighting, make it a rule to specify K-D. Today, as always, the name K-D stands for the right light for the right job at the right price.

Inspect the complete line at Lighting Headquarters—your K-D Jobber.

THE K-D LAMP COMPANY, CINCINNATI, OHIO

K-D LIGHTING The Right Light B

OCTOBER, 1944

Use postage-paid card inserted in this issue for free information on advertised products

163



IRCRAFT ENGINEERED POWER

Burbank, Calif.

A Constellation is composed of many Stars

THERE'S a new constellation in the skies, a star of stars...a new master of the heavens. This great ship, conceived by TWA...built by Lockheed, holds a mighty promise, a promise of tremendous developments in peacetime air transport. We are proud to share in its record-breaking glory and in its promise... proud that AAC Hydraulic Controls are among the many stars which make up this Constellation. These precision units are another mark of AAC leadership in Engineered Power Controls...in the air, on land, and on the sea.

(P.74)

POWER CONTROLS DIVISION



BURBANK, CALIFORNIA

CCESSORIES ORPORATION
ONTROLS - PRECISION RADIO and ELECTRONICS

ODT NEWS

(CONTINUED FROM PAGE 162)

Reports received by the ODT, Colonel Johnson said, indicate that wide-spread curtailment of essential motor transportation services has already taken place because of the shortage of heavy-duty tires. Trucks down include a considerable number which haul aviation gasoline to airfields, he said, and although this service has been given the highest tire priority.

tank truck operators frequently cannot obtain tires after they have secured certificates.

New Form Required for New Vehicle Applications

District managers of the ODT have been instructed not to accept any applications for purchase of new commercial motor vehicles on the old form (WPB 663), as the new simplified form (ODT 663) is now available in all district offices.

Trucks, truck tractors and trailers

are included in the rationing program now completely under the jurisdiction of the Allocation Section of the ODT Highway Transport Department, headed by Matthew E. Kane, section chief.

Private Carrier Advisory Groups Named in 31 Cities

Appointment of Private Carrier Advisory Committees in 31 cities in the ODT's nine regions throughout the country was announced by A. Henry Walter, chief of the Private Carrier Section of the ODT's Highway Transport Department.

Establishment of the committees, Mr. Walter said, is designed to aid both ODT and the operators in their mutual efforts to achieve further conservation and to promote more efficient utilization of equipment, tires, fuel and manpower in the private carrier field.

Mr. Walter said each ODT district manager in the 31 cities is being furnished with the names of the men appointed to the committee in his district. The district manager will contact the appointees and arrange for the first meeting of the group. The advisory committees will advise and cooperate with the district manager on any problems of transportation affecting the private carriers.

Cities in which committees have been appointed:

Region 1 — New York, Boston, Newark, N. J., Buffalo.

Region 2 — Pittsburgh, Philadelphia, Baltimore, Harrisburg, Washington, D. C.

Region 3 — Memphis, Atlanta, Birmingham, Columbia, S. C.

Region 4—Cleveland, Detroit, To-

Region 5—Chicago, Indianapolis, Milwaukee.

Region 6—St. Louis, Omaha, Kansas City, Mo.

Region 7 — Dallas, San Antonio, Houston.

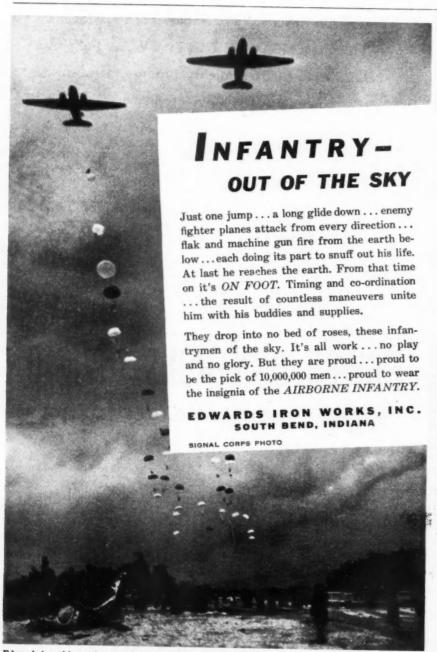
Region 8-Denver.

Region 9—Los Angeles, San Francisco, Seattle, Sacramento, Portland, Ore.

Used Truck Buyers Warned of ODT Requirements

Prospective purchasers of used trucks are urged by the ODT to make certain before acquiring the vehicles

(TURN TO PAGE 168, PLEASE)



Edwards is making a sincere effort to contribute its small share in helping these troops...and all of the United Nations... with the materiel they require. Semi-trailers for combat use are, naturally, included.

EDWARDS TRAILERS



synthetic rubber and high-tenacity *Ray-tex Cord welded together to fortify the mighty tire against cruel impacts and

Raytex Cord, Rayon processed by Dayton, is lighter. It resists fatigue. It actually resists more heat, generates less heat and retains its strength longer at extremely

Only a limited number of Dayton Thorobreds are available for the use of bus and fleet operators. So, it will pay you to ask first for Dayton Thorobreds. They are the prime product of Technical Excellence in synthetic rubber development. Yet their priceles guellitz exetters. ment. Yet their priceless quality costs you nothing extra.

THE DAYTON RUBBER MFG. CO.

Co-Operators of a Government Synthetic Rubber Plant DAYTON 1, OHIO

Maintain Victory Speeds—Conserve Your Tires

*Dayton-processed rayon cord

The Mark of Technical Excellence in Synthetic Rubber

OCTOBER, 1944

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ODT NEWS

(CONTINUED FROM PAGE 166)

that their proposed operation meets all ODT requirements.

Since October 26, 1943, the agency said, persons who were not designated motor carriers as of that date have been required to show that the operation of the truck is necessary to the war effort or to the maintenance of civilian economy. Application for a Certificate of War Neces-

sity must be made and the certificate granted before gasoline allotments are made or, in the case of a new service, application for authority to inaugurate it must be made.

W. A. (Wally)
Doepel has been
n a m e d district
sales manager of
the Pacific Coast
district by the
Lynch Mfg. Corp.,
Defiance, O.





Driver Training Booklet Prepared

Will the return of peace and the removal of wartime restrictions on automobile operation be marred by a renewal of needless traffic-accidents, which killed 330,340 persons and injured 11,000,000 Americans in the past decade, despite greatly curtailed driving in the war years?

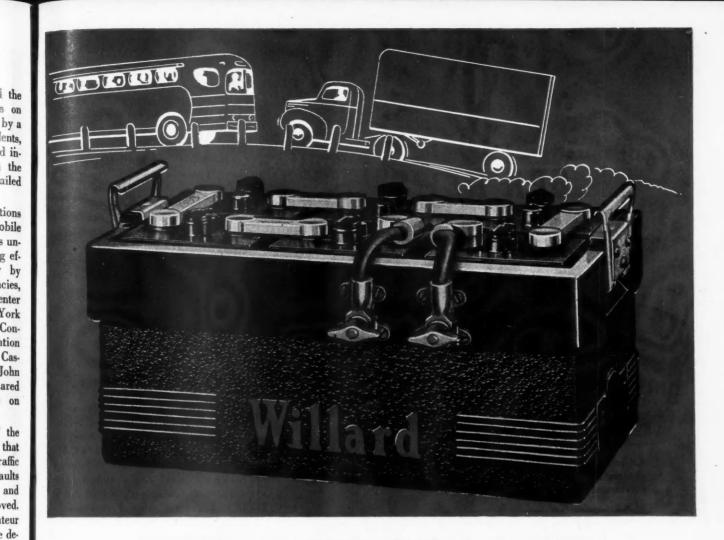
Realizing that many indications point to unprecedented automobile crash casualties in post-war years unless driver-education and training efforts are conducted intensively by educators, parents, safety agencies, public officials and others, the Center for Safety Education at New York University and the National Conservation Bureau, accident prevention division of the Association of Casualty and Surety Executives, 60 John St., New York 7, N. Y., has prepared a practical, step-by-step guide on driver training.

Entitled "Behind the Wheel," the 38-page free booklet points out that more than 85 per cent of all traffic accidents are caused by driver faults and emphasizes that the thinking and the skill of drivers must be improved. Teaching pointers for the amateur driving instructor are given. The development of correct attitudes in the student is emphasized and the instructor is urged to stress fair play, good sportsmanship and consideration for the rights of other drivers and pedestrians.

The seven lessons deal with starting, shifting and stopping, making right and left turns, backing, driving and parking on grades and driving in traffic. An instructor's check list, consisting of 15 items in which the student's performance may be graded as unsatisfactory, satisfactory, or good, is provided.

"Behind the Wheel" is printed in colors and contains many illustrations. It was printed as a war training service by the General Motors Corporation Training Service War Products.

The author is Milton D. Kramer, driver education specialist at the Center for Safety Education. In preparing the manuscript, Mr. Kramer had the assistance of traffic safety educators of the National Conservation Bureau and various other safety and official agencies.



WILLARD QUALITY

Quality, in Willard Commercial Batteries, means the ability to give extra long, extra dependable service in trucks, buses, road tractors and in other commercial applications. It means fine materials and workmanship. It means 74 distinct tests and inspections at Willard factories to make certain that Willard QUALITY remains WILLARD quality. It means that Willard Batteries are good batteries to use—good batteries to buy!



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Army-Navy"E", awarded to the Willard Storage Battery Company, Cleveland Plant, for high achievement in the production of war materiel.



Willards at war: in Tanks • Combat Cars • Jeeps • Walkie-Talkies • Ships—and in Cars, Trucks, Tractors and Buses at home.

... the power to carry on!

WILLARD STORAGE BATTERY CO. . CLEVELAND . LOS ANGELES . DALLAS . TORONTO

OCTOBER, 1944

Use postage-paid card inserted in this issue for free information on advertised products

169





All-purpose Mobo Auto Soap goes a long way-cleans wheels, chassis and running gear as well as body. Does it fast and economically.

Mobo lathers instantly in hot or cold water. Rinses off easily and leaves no streaks. 35 years the favorite with fleet washers, it's made today, as always with 100% vegetable oils-won't injure finishes even in daily washing. Try some now.

MOBO AUTO SOAP



Dissolve grease, oil, and grime instantly from motors, chassis and running gear with Mobo Degreasing Fluid.

Safer, and far superior to gasoline, Mobo degreases swiftly, leaves no greasy film.

MOBO DEGREASING FLUID

JOHN T. STANLEY CO., INC., 642 West 30th St., New York, N. Y.

Used Truck Warranty Liability Cut in Half

The OPA has increased dealers' mark-ups for warranty sales of used commercial vehicles of model years 1937 and later to encourage their repair and maintenance and keep them on the road.

Warranty provisions also have been changed so that dealers are liable for only half the expense that may arise under warranties. (This "50-50" warranty plan is the same as that contained in the used passenger car regulation.)

Warranty mark-ups were increased as follows: 15 per cent for 1944 models and 1943 and 1942 models sold new in 1944, 13 per cent for 1943 models and 1942 models sold new in 1943, 9 per cent for 1942 models, 6 per cent for 1940 and 1939 models, and 5 per cent for 1941, 1938 and 1937 models.

The new mark-ups were effected by lowering the "as is" prices for model years 1937 through 1944 and raising the warranted prices for model years 1941 through 1943. This method raised the dealers' "spread" between "as is" and warranty prices -increasing warranty prices but effecting a total general decrease for both types of sales.

(Amendment No. 5 to Maximum Price Regulation No. 341-Maximum Prices for Used Commercial Motor Vehicles-effective Sept. 4, 1944.)

New Fleet Endorsement

After Oct. 1, 1944, operators of fleets of commercial motor vehicles that do not bear fleet designations will endorse their gasoline coupons by writing their names and addresses on the face of the coupons, under a change in the endorsement requirements announced by the OPA.

Previously, the "T" coupons issued to a fleet of commercial vehicles that did not have a fleet designation were endorsed with the operator's Certificate of War Necessity number. The change is made to facilitate tracing of coupons through the endorsement.

(Amendment 149 to Ration Order 5C-Mileage Rationing: Gasoline Regulations—effective Oct. 1, 1944.)

Exchanged Part Rates Credit

A new OPA amendment states that when an automotive vehicle is ex-(TURN TO PAGE 173, PLEASE)



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FROM MAINE TO CALIFORNI

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backed by an organized

SERVICE OF SUPPLY

• Supplying the needs of repair men and their customers with part of assured quality—without fuss o delay—is now—always has beenand always will be, the business of NAPA— the largest independent organization in the automotive part business. Whoever you are—when ever you are—and whatever you needs may be...

Ine NAPA Seal identifies and confirms the quality of more than 50 essential lines distributed by the nation's largest independent parts organization.

NATIONAL AUTOMOTIVE PARTS ASSOCIATION . DETROIT, MICHIGA

TACHOGRAPHO are worth waiting for

The need and demand for Tachographs is big... and the supply is limited because war production continues to come *first* at Sangamo.

So, if you are not able to get all the Tachographs you would like to have at this time, take the word of operators whose entire fleets have been Tachograph equipped for many years. These men will assure you that Tachographs are worth waiting for.

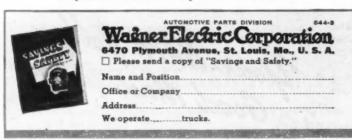
AMAZING RECORDING SPEEDOMETER MAKES GRAPH OF EACH TRIP

An easily read graphic chart made by the operation of a Tachograph on a truck tells all. It records every movement of the vehicle, and by checking a chart taken from the instrument it is possible to tell the exact instant the driver started; just how long he stayed at any particular place; distance and speed traveled; and time elapsed between stops.

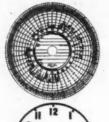
Readily installed on dash of any truck... Chart recordings are automatic, and data furnishes undisputable evidence of driver's efficiency.

Get complete information on this recording speedometer manufactured by Sangamo Electric Company and distributed exclusively by the Wagner Electric Corporation.

Clip and Mail Coupon for Details









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DISTANCE (IN MILES)

OPA NEWS

(CONTINUED FROM PAGE 170)

changed, transferred or traded in, in connection with the sale of another part, a reasonable allowance must be given for the exchanged or traded-in part and credited to the price of the part being purchased.

(Amendment No. 4 to Maximum Price Regulation No. 453—effective Sept. 11, 1944.)

2A & 2B Tire Categories Raised to Class 1 & 2

In a revision of the "Essentiality List" of motor vehicle services approved by the WPB and War Food Administration for ODT certification to OPA for use in the rationing of heavy-duty truck and bus tires, the 2A and 2B categories have been eliminated and vehicle services previously given a 2A rating are to be accorded a Class 1 rating, while operations formerly rated as 3B will be listed as Class 2.

The following designations of ratings also have been added for retail delivery operations: Timber, Class 3; meat animals, work animals and bees, Class 3; race horses and exhibition horses, Class 5.

A provision has been listed stating that "rental cars and trucks" will be classified according to the rating of the preponderance of the traffic carried therein.

Tire Dealers Must Sell to Certificate Holders

Tire dealers who sell to consumers are required by the OPA to sell any new tire in their inventory to any person who presents a valid tire rationing certificate and the purchase price of the tire.

Dealers are also required to post daily inventories of their stock of tires with a cross-section size of 8.25 or larger.

This action is being taken, OPA said, because some dealers, as stocks get short, are representing to ration certificate holders that they have no tires for sale, when in fact tires are available.

Caution Label Warns Operators on Synthetics

As a primary measure of protection, Diamond T Motor Car Co. is now putting a conspicuous caution

label on the instrument panel of every truck. This label warns the buyer that the truck is equipped with synthetic rubber tires and specifies: Do Not Overload—Observe "Victory" Speed—Check Air Pressure Regularly—Do Not Underinflate—Do Not Overinflate.

Realizing that this may not be sufficient, Diamond T is urging its sales representatives to take particular pains to advise every new truck buyer of the serious importance of this warning.

Manpower for Tires

Special programs initiated by the War Manpower Commission during August to find workers for the heavy tire industry were markedly successful, according to Paul V. McNutt, chairman of WMC.

The special drive succeeded in meeting two-thirds of the manpower needs of the heavy tire program, Mr. McNutt said, adding that there was a good likelihood that the bulk of the remaining needs would be met by the end of September.









MANUFACTURERS OF THE FAMOUS HANDY, HANDY VARI-SPEED AND HANDY VISIBLE ACTION GOVERNORS

Tire Chain Supply Tight

Civilians cannot hope for early procurement of tire chains beyond the present quota, the newly-formed Tire Chain Industry Advisory Committee said at a recent meeting, the WPB reports. War supplies remain critically short, a WPB official said.

Medium Size Truck Tires To Be 90% Synthetic

The Office of the Rubber Director. WPB, has issued an order requiring all medium-sized highway truck tires to contain 90 per cent synthetic rub. ber instead of the former 70 per cent. Furthermore, special-purpose tires, including earth movers, rock service. logger types, have been converted in the order from 100 per cent natural rubber to 35 per cent synthetic. The increased supply of high tenacity rayon cord has made it possible to extend the synthetic rubber use to these groups of tires, since rayon produces a more satisfactory synthetic tire.

All truck tire inner tubes and a large group of airplane tire inner tubes are converted to synthetic rubber in the order.

The use of neoprene and Buna N is now permitted without restriction in all wire and cable construction, while use of crude rubber has been further restricted in wire and cable applications.

Civilian Production Will Be Expanded When Germany Falls

The War Production Board has announced that the Army, Navy and major war agencies have unanimously agreed on a program designed to provide the utmost stimulus to reconversion when Germany is defeated, while at the same time, protecting production necessary for the Japanese war.

There will be a reduction of about 40 per cent of war production within three months after the defeat of Germany which will free over 4,000,000 workers.

Industry is to be allowed, in its own way, according to the availability of markets, men, materials and plants, to do the swiftest and most effective job possible of restoring production, making whatever people want and affording maximum employment, just as quickly as possible.

(TURN TO PAGE 176, PLEASE)

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Saves Money, however used, in the Field of Transportation.

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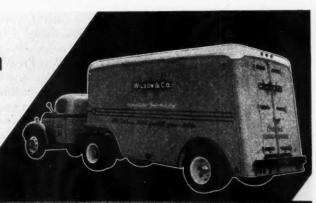
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• Hand decoration tied up this ammonia tank car one and one-half to two days. "Permalux" applied in approximately one hour! Two years later found to be in excellent condition—withstanding all weather and frequent high pressure washings, outwearing hand decoration. Possibly the first use of decalcomania on such equipment. Ask for detailed information.

THE PERMALUX COMPANY • 900 W. LAKE ST., CHICAGO 7, ILL.

Permalux *Made with DuPor

SIGN OF PERMANENT IDENTITY"

Остовев, 1944

Use postage-paid card inserted in this issue for free information on advertised products

175

WPB NEWS

(CONTINUED FROM PAGE 174)

There will be only one preference rating, in addition to the present emergency AAA rating, and this rating will be reserved exclusively for military programs during the war against Japan. All other production will be unrated. Manufacturers will be permitted to accept unrated orders but they will be obliged to fill rated military orders ahead of all other business.

After Germany's collapse no programming of civilian production will be necessary. The information which the War Production Board has on the available supplies of materials, components, facilities, and manpower indicates that maximum civilian output can be achieved without detailed priorities regulation from Washington.

"Milt" Harrison Dies

Milton C. Harrison, long active in trucking industry circles, died Sept. 14 at his home in Philadelphia after

a long illness. At the time of his death he was industrial relations director of the Mack Transportation Co., Phil. adelphia. He was a past president of the Philadelphia Chapter, Pennsyl. vania Motor Truck Association, and had served with distinction as president of the Pennsylvania Furniture Warehousemen's Association. In the solution of its problems he gave the trucking industry a lifetime of unselfish service.

White Has New Manual On Tire Maintenance

As a part of its Personalized Service program, The White Motor Co. is offering to truck owners a new maintenance manual on tires, which takes into consideration the vehicle conditions affecting tire life. The manual was compiled for White by the B. F. Goodrich Co., of Akron, and is based on the study of thousands of tires in use.

The new book becomes a highly valuable supplement to White's Personalized Service which represents an all-inclusive truck-conservation plan.

Recognizing that the maintenance of tires was a problem in itself, White decided to supplement the Personalized Service plan with a tire maintenance manual that would go the whole way in outlining conservation steps, thus overlooking nothing which would contribute to the life and efficiency of trucks. The manual is being distributed to White dealers and distributors throughout the country.

As an opening to better understanding, the Tire Maintenance Manual indicates the vehicle factors affecting tire mileage and points out that operating conditions present varied problems. This is followed by a discussion of the individual vehicle factors, each in a separate section, prescribing how faulty conditions should be corrected.

The first section takes up Wheel Alignment as related to the front axle. The second section takes up Wheel Alignment as related to the rear axle.

The third section is devoted to the Vehicle Frame; the fourth, to Wheel Balance; the fifth, to Brakes; and the sixth, to the Fifth Wheel. As indicated in the conclusion, "it is quite evident that there is hardly any part of the frame or vehicle undercarriage that cannot in some way affect tire performance."



GATKE Brake Blocks and Liners are CUSTOM-BILT for all requirements of Cars, Tractors, Trailers and Heavy Duty Equipment.

GATKE

Heavy Duty

Brake Block

With today's heavy service demands the Extra Performance Qualities of GATKE Brake Blocks CUSTOM-BILT

The smooth, non-grabbing action adds miles to tire life.

Dependable stopping action under all service conditions protects equipment and reduces fatigue of operators.

The long wear life saves maintenance time and keeps 'em rolling without tieups for brake adjustments.

Make this simple test. Use GATKE CUSTOM-BILT Brake Blocks for your next five relines and compare results with the best you have ever had.

Ask your GATKE Jobber or write for particulars.





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NEW PRODUCTS

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of the big advantages of the new type battery, which will outlast the life of 400 dry cells, the company claims. It has been calculated that users can save approximately \$10 a year on every flashlight maintained, as compared to dry cell operation.

The new wet battery requires a special type Mazda Lamp, which comes in 1.9 volt; .6 ampere of screw base

and flange base design. This is a 600 mil lamp as contrasted with the 300 mil lamp used with dry batteries. Actual wattage consumed with the wet battery is 50 per cent more than with the dry type and since light is directly proportional to watt consumption the wet batteries give a distinctly brighter light than the older type. The light is constant, since the voltage drop between a full charged and discharged wet cell battery is only .35 volts, the dry cell drops approxi-

mately a full volt. This assures constant top quality light at all times the wet cell light is being operated.

The company sells the complete recharging equipment, together with tester, as part of the program. Use Free Postcard for More Details.

P277. Stellite Blades

Boring and reaming blades made of Haynes Stellite cobalt-base alloy are available from Haynes Stellite Co., Kokomo, Ind.





Haynes Stellite boring blades are used for rough- and finish-boring operations on cast iron, malleable iron, brass and bronze, and for rough- and semifinish-boring operations on steel. Haynes Stellite reamer blades are used chiefly on cast iron, although they have been successfully used on malleable iron, brass and bronze. They are not recommended for finish-reaming steel.

Haynes Stellite alloy boring and reaming blades are available in two grades—98M2 and Star J-Metal—with Haynes Stellite 98M2 especially recommended for boring steel. They are furnished to users' specifications, finish-ground to required tolerances. Use Free Postcard for More Details.

P278. Anti-Dust Concentrate

A new concentrated treatment for cement floors, etc., is said to provide coverage for at least 1000 sq. ft. per gallon. This material, known as Synkrete Concentrate and made by Synthex Products Co., New York City, is diluted with three parts water before use. Thus one gallon of concentrate gives four gallons of ready-to-use Synkrete.

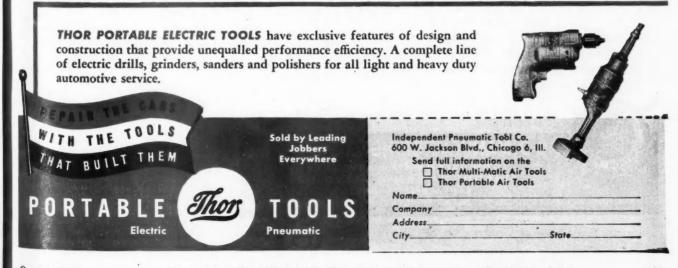
It is easily applied by mop, brush, long handled broom or sprinkler. It soaks into the pores of dusting con-

(TURN TO PAGE 180, PLEASE)



Amazing savings in time and money are being made with this new 2-in-1 Thor Air Sander-Polisher by automotive shops everywhere. Weighing only 4½ pounds, it combines all the small-size, low-maintenance advantages of air tools with the power of electric tools twice its size! Easily gets into places you can't touch with ordinary tools. A compressor as small as 1½ horse power runs it. Operates as both a sander and polisher.

ONE SIMPLE CHANGE makes this Multi-Matic Air Tool either a Sander or a Polisher. Convenient regulator adjusts speed for most efficient performance.



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NEW PRODUCTS

(CONTINUED FROM PAGE 178)

crete where it hardens to form a rocklike water insoluble mass that reinforces the binder. After treatment with Synkrete, cement floors are far harder, more resistant to traffic, water infiltration, oils, greases and chemicals. They are easier to maintain with less "drag" in sweeping. The effect of a treatment is said to be lasting. The liquid is almost colorless and does not affect appearance of floors. When floors are to be painted later, a treatment with Synkrete acts as sizing.

Use Free Postcard for More Details.

P279. Drill Sharpener

Accurate sharpening of drills, with little practice, is the function of the new drill sharpener known as Majestic, which fits any grinder and is easily adjusted for sharpening straight or No. 2 taper-shank drills

perfectly. Instruction dial enables anyone to accurately set sharpener for sharpening from 5/32 in. to 1 in. drills. Dial insures accuracy in measuring angles and clearances on twist drills, thus saving drill troubles and prolonging drill life.



Straight or taper-shank drills are positioned in a bracket-supported trough so their ends move in a guided patch against wheel of grinder. Setting for a given drill is as directed on instruction dial.

Each unit is precision built, individually calibrated and tested. Use of this unit is said to improve drilling accuracy and speed, improving performance of drill presses, as well as keeping drills sharpened for faster cutting. It is manufactured by Ameraco Industrial Specialties, Chicago, Ill.

Use Free Postcard for More Details.

(TURN TO PAGE 200, PLEASE)



Truck driver training at Camp Lee's Army Service Forces Training Center has passed its half hundred thousand mark. And to commemorate the occasion, Colonel James H. Johnson, center commander, at a recent command inspection on the blacktop, congratulates the 50,000th truck driver trained at the ASFTC, the world's largest Quartermaster installation. Shaking hands with Col. Johnson is Private Warren Bassani of Pittsburgh, the 50,000th.



Successful business comes from concentration on one complete quality line . . . P & D ignition replacement parts for trucks, buses and passenger cars. Today the war comes first, but America's leading mechanics know from experience that P & D products maintain and increase profitable operation because the three benefits of concentration are always there with P & D.

3 PAD BENEFITS

- Minimum inventory, because one complete line.
- 2 The best is always at hand, because ? & D make only one quality ...the finest.
- 3 Customer satisfaction because good work plus P&D parts means peak performance.



REPLACEMENT PARTS



URNAL

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(CONTINUED FROM PAGE 78)

and 70 reported losses for July, 1943.

July revenues of carriers in the Eastern District decreased 5.6 per cent below June but were 1.3 per cent above July of last year. Their expenses decreased 2.5 per cent below June but were 3.2 per cent above July, 1943.

Carriers in the Southern Region had revenues in July that were 4.9 per cent under June and 4.2 per cent below July of last year. Their expenses were 1.5 per cent below June but were 0.9 per cent above July of last year.

The July revenues of carriers in the Western District decreased 4.9 per cent below June but were 1.3 per cent above July, 1943. Their expenses were 0.5 per cent higher than in June and 7.7 per cent above July of last year.

Eastern carriers showed operating ratios of 98.4 in July; 95.2 in June,

and 96.5 in July, 1943.

Operating ratios of the southern carriers were 101.7 in July; 98.2 in June, and 96.6 in July of last year.

The ratios of the western carriers were 101.0 in July; 95.6 in June, and 95.0 in July of 1943.

Moss Made Pedrick Representative in Detroit

The Wilkening Mfg. Co., Philadelphia, producer of Pedrick piston rings, announces the appointment of Thomas W. Moss as Detroit representative. Mr. Moss succeeds Warren K. Lee who is now factory manager.



Tom Moss has been in the automotive industry since 1916. He has had extensive experience in production, distribution, merchandising and service. Not only has he had important connections with manufacturers such as Chevrolet, Pontiac, General Motors of Canada and Chrysler, but he also operated his own independent repair shop in Buffalo in 1925-26 and his own automobile agency in Ashville, N. C., in 1940-41.

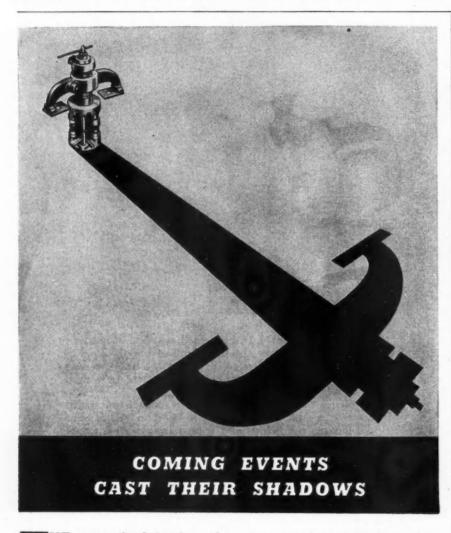
From 1934 to 1938, Mr. Moss was General Service Manager of Chrysler Corp. In 1939-40 he was Director of Truck Sales for the Dodge Bros. Div. of Chrysler.

Surplus Army Trucks Meet Critical Needs

A large number of trucks that have been used for transporting GI-Joe and his equipment at the various military bases throughout the country have been declared surplus by the Army, but are once again in the spotlight helping to bring V-Day.

Ernest L. Olrich, Assistant to the Secretary of the Treasury, in charge of the Office of Surplus Property, today told of how cooperation between

(TURN TO PAGE 184, PLEASE)



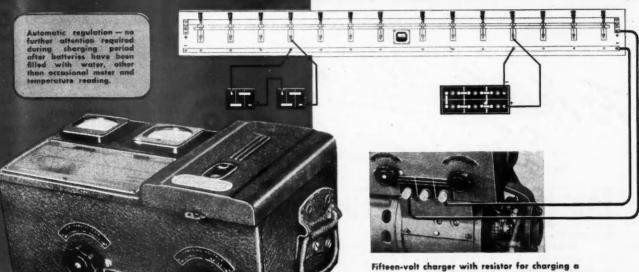
HE approach of the time when we can again promise immediate delivery on Lisle Ridge Reamers, is already foreshadowed by expanding production of this popular tool. • At present, our heavy production of vital war equipment, plus the necessity of giving prior attention to back-orders, is temporarily delaying shipment of new Ridge Reamer orders. However requisitions are being accepted now, for delivery in the order received. We suggest that you send your orders at this time

LISLE CORPORATION
Box 1017 • Clarinda, lowa

to insure the earliest delivery possible.

Immediate Delivery! WEIDENHOFF MODIFIED CONSTANT VOLTAGE

Battery Charger



6-volt battery at high rate—a handy feature.

All you need to get immediate delivery of this charging equipment is a WPB-541, WPB-542 or WPB-547 rating of AA-5 or better. Then you can charge batteries economically, with low current cost per battery charged.

Operators of large fleets of cars, trucks and buses, all have a definite need for this modified constant voltage charger. It can be used as a fast charger on either 6 or 12-volt batteries.

Many operators must charge a large number of batteries overnight. This charger will handle fifteen 12-volt, or thirty 6-volt batteries at a time! No harm to batteries if left on line after fully charged.

Chargers available in groups connected either in series or parallel. Don't delay-they can be delivered now.

MODEL COMBINATIONS

Charging Unit Panel or Equipment 772 14 Circuit Panel (No Resistors) 15-volt 773 7.5-volt 14 Circuit Panel (No Resistors) 15 Circuit Panel (With Resistors)

full particulars are available on this profitable equipment for servicing batteries of your fleet. Your inquiry will receive prompt attention

BUY WAR BONDS

Joseph Weidenhoff, Inc. Chicago 24, Illinois











BENCHES ENGINE ANALYZERS BATTERY CHARGERS MAGNETO TESTERS ELECTRICAL TESTING & SERVICE EQUIPMENT

OCTOBER, 1944

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Use postage-paid card inserted in this issue for free information on advertised products

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his office and that of the War Food Administration has resulted in sales of 7000 trucks in the last few weeks to farmers and haulers of agricultural products in critical need of transportation facilities.

A total of four million bushels of Milo Maize were saved in Southern Texas at harvest time by ear-marking an allotment of these trucks for this section. These trucks also assisted in the movement of the wheat harvest in Texas. Transportation of limestone for soil conservation to farmers in Tennessee at a critical period was effected by the use of "surplus" trucks routed to this area especially for this purpose. A group of 250 trucks were rushed to North Carolina to move a large tobacco crop that might otherwise have perished. Another group of trucks scheduled for sale in another area were diverted to Charlottesville, Va. where they saved

the peach crop in that vicinity. A fleet of trucks accomplished a similar mission in North Georgia.

Potato growers in Colorado had a dire need for trucks to assist in mov. ing their crop. Treasury's Office of Surplus Property diverted a number of trucks to that state to fill this need successfully.

New Aluminum Industries Office

Aluminum Industries, Inc., Cincinnati, Ohio, manufacturer of Permite Products, has announced the opening of a new sales office at 9 Rockefeller Plaza, New York City. It will accommodate the New York district managers and representatives of the automotive replacement, industrial and paint divisions of the company. Representing Permite's automotive replacement division in the New York area are Ralph W. Doherty, eastern regional manager, and Arthur W. Heidemann, field engineer.

(TURN TO PAGE 186, PLEASE)



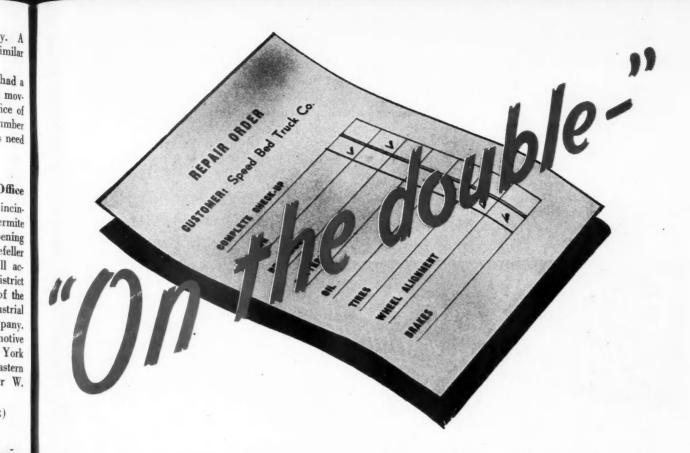
This White Super Power tractor with semi-trailer, following an accident in which the vehicle dropped over a 30-foot bank, was completely restored, as shown, with the help of modern repairing and rebuilding facilities by the Peterson Sales Co., White dealer in Shreveport, La.



This new 30-foot Fruehauf trailer, a recent addition to the fleet of Motor Cargo, Inc., in Akron, patriotically carries an honor roll of the company's 173 employees who have entered the armed services. Gold stars mark the names of two who have given their lives for their country. Fittingly inscribed on the back of the trailer is the message "Back Them Up With More Bonds."



O. BOX 90 · · · CORAOPOLIS · · · PENNSYLVANIA



The "On the Double" order of the day for trucking service must be matched with "On the Double" action by Maintenance Departments. A truck, laid up for repairs, means not only loss of revenue, but delay in the shipment of vital war material.

The Timken Company's branch warehouses in sixteen principal cities and authorized distributors everywhere are prepared to act "On the Double" to serve your needs for Timken Bearings. Practically every truck in service today is equipped with Timken Bearings in those posi-

and axles groan. The truck designer and the truck manufacturer put Timken Bearings there with confidence as experience has dictated that their thrust and radial load carrying ability, their long-wearing qualities are unsurpassed for the tough, rugged service in the transportation business.

When replacement of a bearing is necessary, be sure that it is with another Timken Bearing. The service will be "On the Double" too.

THE TIMKEN ROLLER BEARING COMPANY, CANTON 6, OHIO



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Engine Protection Booklet

How to safeguard upper valve stems and valve seats against excessive accumulation of carbon, and prevent scoring due to dry cylinder walls, pistons and rings is pictorially explained in an 8-page booklet just released by the Amalie Division, L. Sonneborn Sons, Inc., 88 Lexington Ave., New York 16. Write to this address on your business stationery for copies.

Perfection Gets Third Star

A third star for its Army-Navy "E" Pennant was recently awarded the Perfection Steel Body Co. at Galion, Ohio, manufacturer of steel dump bodies, hoists, and platform stake bodies. This represents the fourth citation this company and its employees have received for sustained excellence and constantly increasing war material production over a full

two-year period. Harry Cobey, president of Perfection, pointed out that while the initial "E" Pennant award is not easily won—only about 3 per cent of all war plants have received it—each additional star award is increasingly difficult to obtain, therefore, less frequently awarded because each star requires that the previous six months record must be bettered.

Training Course for Fleet Supervisors .

"Keep 'em rolling—despite shortages of manpower and equipment—through better training of available personnel." With this theme as its keynote, the Southeastern Motor Vehicle Fleet Supervisors Training Course, to be held October 23-27 at the Georgia School of Technology in Atlanta, will offer specialized studies in the fundamentals of selecting, training and supervising drivers for safety, efficiency and conservation in the motor transportation industry.

Announcement of the course was made by Faber A. Bollinger, Southeastern Regional director for the National Safety Council.

"Unless the present upward trend in traffic deaths is checked," Mr. Bollinger warned, "post-war transportation will bring the greatest highway toll in history. One of the most effective steps in checking the trend is better training and supervision of drivers.

"Military demands mean fewer men and women on the home front who must do more and better work, and training is needed to help offset these personnel shortages. This program provides courses by experts to give key workers and replacements the necessary 'know how.'"

Co-sponsors of the short course will include the Southeastern Region of the National Safety Council, Georgia Tech, Motor Vehicle Association of Georgia, Atlanta Motor Club and the Southern Safety Conference.

Course director will be Paul H. Coburn, fleet safety engineer of the National Safety Council. Other instructors will include Prof. Amos E. Neyhart, of the Institute of Public Safety, Pennsylvania State College; Milton D. Kramer, of the Center for Safety Education, New York University; Prof. R. L. Allen of Georgia

(TURN TO PAGE 188, PLEASE)



As a Sentinel on War Transportation Lines



STOP ... THIS UNDERBODY ATTACK

on Your Equipment!

70UR fleet is a vital link in the Nation's essential trans-I portation system. Guard it from those "undercover agents" that are constantly attacking underbody parts.

Stop the destructive action of those agents of Corrosion and Abrasion-rain, ice, slush, road salts, cinders, gravel and exhaust fumes—or they will eventually cause extra shop time, repairs, replacements and shorter truck life.

How? By giving each of your trucks a protective coating of the new underbody materials.

Here's a DeVilbiss Spray Outfit that's especially designed to apply these heavy underbody materials at top speed. It produces a tight-adhering coat of strong resistance. It makes full coverage easy—even in cracks and hard-to-reach areas.

Besides being a timely and patriotic truck conservation measure, such underbody protection will help shut out drafts, dust, exhaust fumes and road noises from cab and

DeVilbiss QMD-611 Outfit for Underbody Coating includes a 10gallon pressure-feed tank with bottom outlet, MBC gun with spray head for heavy materials, air valves, air and fluid hose and connections.



Ask your DeVilbiss distributor for his suggestions on underbody coating and how to get the equipment for it.

THE DEVILBISS COMPANY . TOLEDO 1, OHIO Canadian Plant: WINDSOR, ONTARIO





DE VILBISS Spray Systems

SPRAY EQUIPMENT . EXHAUST SYSTEMS . AIR COMPRESSORS . HOSE & CONNECTIONS

OCTOBER, 1944

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Use postage-paid card inserted in this issue for free information on advertised products

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Tech and leading fleet safety directors and transportation officials.

Enrollment is open to fleet owners and operators, safety and personnel directors, fleet supervisors and safety engineers, chief mechanics, transportation officials and others directly connected with safety and conservation in the motor transportation industry. Certificates will be issued to those who fulfill course requirements.

The course will cover the basic elements of a well-balanced accident prevention and conservation program in wartime and will show how these techniques can be projected into the post-war period. Subjects will include the newer techniques of driver selection, methods for testing and improving driving skill, developing and sustaining safe driving attitudes, driver-mechanic cooperation, the effect of accurate accident reporting and analysis on the safety program,

and the effect of accident prevention on the progress of the industry.

(TURN TO PAGE 191, PLEASE)

Reo Motors, Inc., announce of through its General Sales Manager, Don C. Streeter, the opening of a direct factory branch at Manchester, N. H.,



chester, N. H.,
with K. W. Wright as branch manager,
Mr. Wright is a veteran in the trucking business, having started with White
in Boston as a mechanic in 1922. From
Providence, R. I., as White branch
manager he joined the Autocar Company and later became superintendent
of maintenance for a large bus operation in New England.

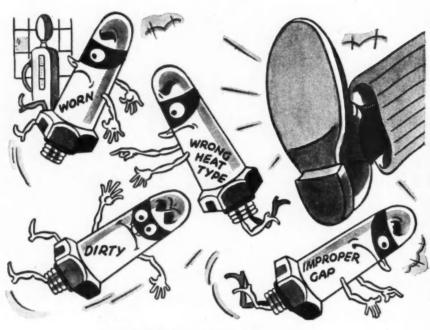
The Manchester operation is under the jurisdiction of T. W. Paul, Reo's New England manager, Boston



One of the most serious bottlenecks in the critical tire problem has been eliminated by scientists of The General Tire & Rubber Co. research staff in Akron. Gilbert Swart, General Tire research director, has invented a new method of mixing carbon black in synthetic latex which reduces the milling time 35 per cent. Comparing the old method, left, and the new method, right, are Swart, General Tire President William O'Neil, and Stanley Crossland, of the board of directors, Rubber Reserve Co. in Washington



Soldiers for World War I were recruited from the wagon-like conveyance shown above, drawn by a converted Dodge Brothers passenger ar of 1917 vintage. The modern Dodge built recruiting ear illustrated, used in the present war, shows the progress made in comfort, appearance, and utility.



Kick out these "POWER THIEVES"!

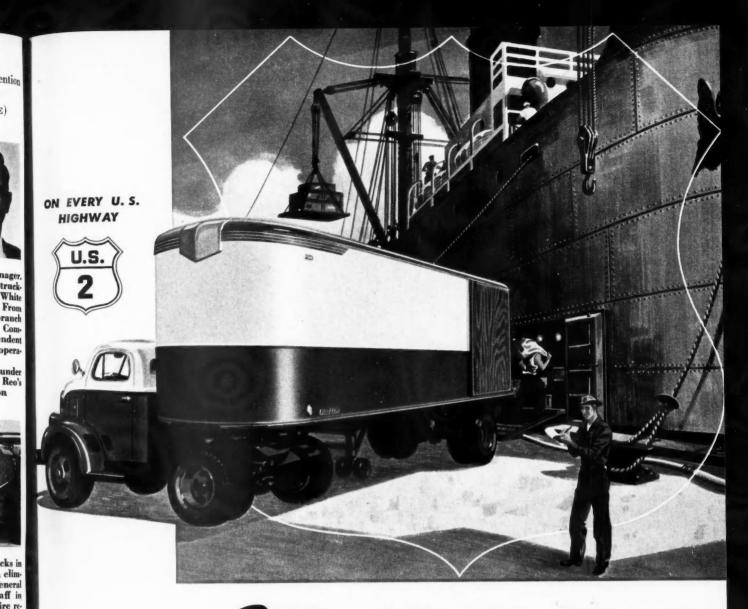
Dirty or worn spark plugs can waste a powerful amount of gasoline—especially when a car or truck is in constant service. A few minutes spent regularly on a thorough check up pays big dividends. When new plugs are



needed, it's smart to put in Edisons. They are built to get maximum power from every drop of fuel. The "greatest name in electricity" is their guarantee of great performance.

Edison_ SPARK PLUGS

EDISON-SPLITDORF CORPORATION, WEST ORANGE, N. J



Better-fitted for big jobs

Highway is manufacturing commercial trailers again in limited numbers. The new Highway "Clipper" is already in production, a finer, more efficient, more economical trailer to operate—the kind of a trailer you would expect to come out of Highway's extensive experience in wartime manufacture.

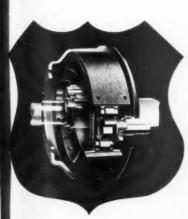
This new, improved Highway "Clipper" and its companion, the "Freightmaster," have many notable features, among the most important of which are the larger brakes. These new brakes measure 5½" and 7" in width and 16½" in diameter. Added square inches of braking surface offer obvious advantages — reduced pressure per square inch, longer life, smoother braking and less heating.

See the new Highway "Clipper" at your earliest opportunity. Watch for it on the highways, at busy shipping docks and freight terminals. Send for the new illustrated trailer and brake literature which tells about Highway's many points of superiority. Let your next trailers be Highways!

HIGHWAY TRAILER COMPANY, EDGERTON, WIS.

Truck Trailers and Bodies • Earth Boring Machines • Winches and other Public Utility Equipment

HIGHWAY AMERICA'S TRAILERS



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All hold-over tire chains should be inspected immediately.

Repair those that are usable, and order necessary new Weed Chains at once from your Weed Chain distributor. It may be too late if you wait for the first snow and ice because tire chains for commercial use are still being manufactured under WPB Limitation Order No. L-201.

Protect your own vehicles by attending to their tire chains right away. For the best buy in tire chains, order Weed American Bar-Reinforced. The reinforcing bars—bridges of steel—insure more traction, greater safety, longer mileage. Made by American Chain Division of American Chain & Cable. "In Business for Your Safety."

GET WEED CHAINS EARLY

Keep Your Trucks Moving

THE REAL PROPERTY.

(CONTINUED FROM PAGE 188)

of Transfer Truck fuel Rationing to OPA

The Office of Defense Transportation has announced that it is completing arrangements to transfer a part of its commercial motor vehicle gasoline rationing functions to the office of Price Administration to become effective about Oct. 15. In a statement, ODT Director J. Monroe Johnson said:

"Present conditions require that the ODT regional highway organization direct a greater amount of attention and effort to the transportation phases of the ODT program rather than the detailed work of gasoline rationing. After almost two years' review of gasoline allotments to commercial motor vehicle operators, present certifications reflect the general needs of the industry.

"The majority of present changes in gasoline allotments result from unusual conditions, mostly of a temporary nature, which require more knowledge of local conditions than of over-all transportation problems. Now ODT transportation specialists and technical workers will have more time to devote to the traffic registration program, organization of joint action plans, maintenance and conservation work, and continuing the orderly movement of farm products."

As a result of the proposed transfer of a portion of its previous duties to OPA, the ODT highway department regional and district organization will be changed to more nearly coincide with OPA regional and district office locations and boundaries. Regional changes include the closing of the ODT highway department regional office at Kansas City, Missouri, reducing the number of regional offices from nine to eight; and rearrangement of the areas in all regions except Region One, administered from New York City. The regional information, district rail, and district highway department offices in Kansas City, will be con-

The district and field offices will be reduced to 92 district and 44 field offices, a total of 30 offices being

The changes in the regional and

district organization are expected to release about 1000 clerical workers and bring about a saving of over two million dollars a year.

East and West Coast Allocations Of Fuel Below Requirements

Distribution among the various classes of transport facilities of the automotive gasoline allocation for the last three months of 1944 was announced by Col. J. Monroe Johnson, director of the Office of Defense Transportation.

The fourth quarter allocation of the Petroleum Administrator for War in response to requirements filed by the ODT, as claimant agency for all. forms of domestic transportation, amounts to 1,013,000 barrels daily.

ODT's requirements were met by the PAW except for the East Coast and West Coast districts. PAW advised that because of the continuing high level of military requirements it was unable to meet the East Coast requirements by 9000 barrels daily

(TURN TO PAGE 192, PLEASE)



(CONTINUED FROM PAGE 191)

and the West Coast requirements by 2000 barrels daily.

The total allocations made by the PAW to the ODT for the October-November-December period are: District I (East Coast) 351,000 barrels daily; District II (Midwest) 383,000; District III (Southwest) 125,000; District IV (Rocky Mountain States) 29,000; District V (Pacific Coast) 125,000.

Personnel Notes

James P. Roberts, for the last four years assistant manager of the Chicago branch of the Ford Motor Co., has been appointed manager of the St. Louis (Mo.) branch. C. M. Pfeiffer, assistant manager at St. Louis, will continue in that capacity.

W. C. Schumacher, manager of sales, Motor Truck Division, Interna-

tional Harvester Co., has announced the appointment of Karl W. Freeman as southern district manager. Prior to his new appointment, Mr. Freeman was the company's branch manager at Atlanta, Ga. He served at the Des Moines, Council Bluffs, Amarida and San Antonio branches.

J. E. Bain, formerly national account representative of The White Motor Co. in the metropolitan region, New York, has been named manager of the Brooklyn branch, according to announcement by J. N. Bauman, vice president in charge of sales. He succeeds E. J. Lynch who has been given an important sales assignment in New York City. Mr. Bain was Springfield (Mass.) branch manager before going to New York.

Robert Wright, who has been with the ODT as assistant to William J. Cumming, head of the Vehicle Maintenance Section, is detailed to the Automotive Division, W.P.B., where he will be Acting Chief of the Trailer Branch pending a transfer. Bob was with Chevrolet Motor Co. prior to the war, specializing in parts distribution and in fleet sales contacts.

W. R. Persons, Pittsburgh district manager of The Lincoln Electric Co., Cleveland, Ohio, has been transferred to the factory at Cleveland to carry out a special post-war planning assignment. J. S. Roscoe, former Syracuse district manager, has been appointed manager of the Pittsburgh office.

H. J. Sharkey has been made Northwest sales representative for The Toledo Steel Products Co., with headquarters in Seattle.

Jack Bennett has been appointed Northern California sales representative for The Toledo Steel Products Co. with headquarters in San Francisco.

David J. Bonawit was appointed chief engineer of the Marshall-Eclipse division of Bendix Aviation Corp. He was formerly executive engineer of the Manhattan division of Raybestos-Manhattan Corp.

Used Car Rumor Denied

Answering reports that have been circulating OPA, Administrator Chester Bowles said that no general revision of used car prices is contemplated.

(TURN TO PAGE 194, PLEASE)



Plus a Perfect Break-In Oil

Lubri-Gas is today's answer for proper lubrication after a motor overhaul. Added to your gasoline, it enters the combustion chamber as an oil fog which condenses and bathes all upper cylinder parts with a clean oil film.

Lubri-Gas puts your new and newly overhauled motors "in the groove." Its continued use helps to prevent carbon, reduces friction, increases fuel mileage and adds pep to all motors. Lubri-Gas keeps your cars and trucks on the road and out of the repair shop.

LUBRI-GAS TREATED GASOLINE Cleans and Lubricates as It Powers the Motor

Lubri-Gas treatment introduces a carbon and sludge dissolving lubricant as a clean unburned oil fog—with the fuel. Improves ignition. Frees sticky valves. Increases compression. Prevents blow-by and oil dilution. Reduces friction between piston rings, piston, cylinder. Prevents overheating. Increases power, SAVES WEAR, REPAIR, GAS, OIL.

· Anti-Friction · Anti-Knock · Anti-Carbon · Anti-Sludge

LUBRI-GAS

221 N. LaSalle St., Chicago 1, III.

AMONG TODAY'S USERS OF LUBRI-GAS

International Harvester Ca., Rock Island, III. Rock Island Arssnal, Rock Island, III. Rock Island Arssnal, Rock Island, III. Stone & Webster Construction Co., Knorville Tone. Ossmas & Hormas, Madison, Williams, Texas, Montana Ranas, Ioras, Madison, Williams, Texas, Montana Ranas, Ioras, Worksnal, Laudellile, Kentucky Homobis Army Services Forces and variese U. S. Army Engineers and other U. S. Army Engineers and other U. S. Army Engineers and other U. S. Army Chila, Ing Campany, Chicago, Illinois, Keeshia Motor Express Ce. and Huber and Huber Motor Express Ce.



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BRAKE LININGS, CLUTCH FACINGS, FAN BELTS, HOSE FOR CARS, TRUCKS, BUSES, TRACTORS ON THE WAR AND CIVILIAN FRONTS

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Kauffmann Heads Mack Diesel Development and Research

William M. Kauffmann has been appointed assistant to the chief engineer, in charge of Diesel engine development for Mack Trucks, Inc. In his new capacity, Mr. Kauffmann will supervise the truck firm's greatly enlarged facilities for Diesel research and development.

Lumber Industry Gets Special Tire Conservation Guide

With current shortages of heavyduty truck tires as the most serious threat to log and lumber production since the beginning of the year, the War Production Board issued a conservation guide for tires for the use of the lumber industry.

The industry, as a whole, hauls about 80 per cent and in some areas 100 per cent of its logs all or part of the way to sawmills by truck.

WPB urged that the lumber industry conserve its tires by improving roads, reducing truck hauls, recaping tires and checking condition of trucks and their operation.

Gray Resigns as Director Highway Users Conference

Chester H. Gray, managing director of the National Highway Usen Conference since Jan. 1, 1938, resigned effective Sept. 30. No successor has been named.

General Tire Promotes Bellows

Howard Bellows has been appointed Eastern division manager of The General Tire & Rubber Co. Bellows, who has been with General in a sales capacity since 1924, will make his headquarters in New York, although his responsibilities include supervision of Philadelphia branch as well.

Autocar Rates Three Stars

The fourth award of the Army-Navy "E" has been conferred on the Autocar factory in Ardmore, Pa. This means that the "E" pennants now can display three stars.

(TURN TO PAGE 196, PLEASE)

Magnus Hendrickson, founder of the Hendrickson Motor Truck Co., Chicago, Ill., passed away August 31 at the age of 80, following several weeks illness. Born in Sweden, Hend-



Four sons now carry on the business headed by Robert T. Hendrickson president, a past president of the Chicago Section of the Society of Automotive Engineers. The plant at preent is engaged in war production six wheel units and tandem axles for

tank trucks and trailers

John J. Dunn has been appointed truck distribution manager for Dodge Division of Chrysler Corp. He will allocate new Dodge trucks for essential civilian





* Twenty-four hours a day, in almost every part of the world, the materials formerly used to manufacture your tire chains are still working for our victorious forces.

CM CLAW AND DREADNAUGHT TIRE CHAINS

have proven themselves "tops" in war as they have in peace. We feel confident they'll be back to their peacetime job soon.

COLUMBUS-McKINNON CHAIN CORP.

GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.
Plants at Angola, N. Y., St. Catharines, Ont., Can. and Vereeniging, So. Africa



Repairs cracked cylinders, water jackets, engine heads quickly—safely—securely!

There'll be lots of cracked cylinders this winter—due to the age of the cars and scant supplies of anti-freeze—and there'll be very few welders to make repairs.

Many cars and trucks will need Du Pont MOTOR-MEND, for it repairs engine cracks quickly, securely and without the need of tearing down the engine. Just pour it into the radiator and let it mix with the cooling solution. It won't clog the radiator or harm the parts—and it is not affected by standard anti-freeze or anti-rust solutions. It's highly efficient and dependable—made by a new formula developed by the Du Pont chemists.

MOTOR-MEND is in heavy demand, so order a stock now and have plenty on hand when the freezing weather sets in.

Packed in Pints (12 to carton), \$1.50 list, with usual trade discounts. Sold by automotive jobbers everywhere.

E. I. du Pont de Nemours & Co. (Inc.)
Wilmington, Delaware



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Army's New Tests Speed Driver, Mechanic Training

TWO hundred seventeen men, the average Army company, arrived in France eight weeks ahead of schedule, ready to "give out" in the never ceasing task of supplying combat troops. It might mean the margin between victory and defeat—these men

arriving early instead of "too late." That is one of the accomplishments during a recent month of the new testing program recently inaugurated at Camp Lee's Army Service Forces Training Center.

Under the new plan, trainees in all Quartermaster basic technical training specialist courses at the ASFTC are given theoretical and performance tests upon completion of their eight weeks' course. Similar tests are given all men here for retraining—the results indicating how much additional

training is required before reassign.

For each of the specialist courses in basic technical training there is a final theoretical examination which covers all phases of the course, and a performance test under field conditions which determines whether the individual can perform the technical job for which he has been trained in the Quartermaster Corps.

Take, for example, the test given light truck drivers—those trained to drive trucks up to a capacity of three tons and to make minor adjustments and necessary repairs while on the road. Each driver taking the course in the ASFTC is required to drive his vehicle over the difficult driver test course. He is checked for proper use of hand signals, observation of traffic signs, ability to use vehicle controls, including front wheel drive and auxiliary range, and his ability to back and park the vehicle.

The second phase of the test deals with driver maintenance. In this phase a driver is furnished a two-and-one-half-ton cargo truck and a driver's tool set. He must perform the various phases of driver maintenance including services before, during and after operations. He must also lubricate designated points on the vehicle, check the brake system, make minor repairs such as adjusting fan belts. Certain conditions which might occur during operations are set up on the vehicle. The driver must locate and correct these deficient conditions.

Screening of men as they arrive determines the length of basic retraining, varying from two to six weeks, which these men are required to complete before receiving technical training. Later, retraining men entering the QM technical training courses, who have had previous military training or experience in the particular course in which they are entering, are immediately required to take the theoretical and performance tests of that specialist course.

The results of these tests determine the number of weeks of retraining needed for the individual, and instead of pursuing the full training course, he is placed in the proper week of training as indicated by the results of the tests.

In a recent survey of 750 retraing men tested under the plan, it was (TURN TO PAGE 198, PLEASE)





The Sunnen "LB"

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BUSHING GRINDER

Grinds and finishes any hole from .480" to 2.400". Complete with stones and mandrels to handle range of .720" to 1.020".

"The FACTORY STANDARD PRECISION of the SUNNEN BUSHING GRINDER Means Longer Service"



The coveted Army-Navy "E" waves ever the Sunnen plant—evidence of the important part Sunnen equipment is playing in the war effort. t's the extreme accuracy of the Sunnen Bushing Grinder that's most important in doing the kind of service job you need today. This grinder produces a hole that is round, straight, and true within .0001" (guaranteed). The super-smooth, mirror-like finish is free from high spots and chatter marks. That means you can make close fits, yet long run-in periods are unnecessary. The bearing has a full running surface that holds a better oil film.

In addition to the piston pin, knee action, spindle body, rocker arm, connecting rod, steering sector housing bushings, and hydraulic brake cylinders, you can handle such parts as compressor cylinders, electric motor bushings, and many other bearings from your shop equipment.

Your war-time repairs should be made with Sunnen Bushing Grinder for longer life and more efficient operation.

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determined that by advancing the men to the stages of training needed, 1736 man-weeks of training were saved. This is the equivalent of placing 1736 trained men into combat one week earlier than would have been the case had they all pursued the normal course of instruction. In other words, an average company—217 men—would be put into the field eight weeks earlier.

A bay in one of the huge auto repair shops along Camp Lee's Shop Road is used as the testing area for auto mechanics. Here trainees completing the specialist course are tested for their knowledge of wheel toeing, steering gear and clutch adjustment, engine tuning, vacuum testing, breaker and valve point adjustment, sediment cup and gasoline cleaning, fan belt adjustment, Hydrovac brake system bleeding and cleaning, oil filter servicing, care and maintenance of air cleaners, crank-case and carbure-

tor intake ventilator cleaning, wheel bearing adjustment and lubrication, bogie axle lubrication, the use of lubricants, battery testing, wiring circuits checking, low voltage testing, and winch problems.

Floyd A. Spindler, civilian em. ployee at the shop who, before coming to Camp Lee was associated with garages in Wheeling, W. Va., for many years as service manager. fleet supervisor, and shop foreman, says that trained mechanics can probably miss a couple of days of school and it won't show up in their perform. ance test. However, two days' absence will show up in the case of previously untrained men. For instance, when one man failed on the electrical part of the test, it was found that he had missed two days when that subject was being taught in the course he was sent back for the period of training and afterward passed the electrical phase of the test with flying colors.

Colonel James H. Johnson, commanding officer of the ASFTC, views this new testing program as a great stride forward in technical training at Camp Lee. The program points out mistakes in training, assures that men receive proper training in the many QM fields, saves man-hours in retraining men, and ascertains the effectiveness of the training program.

Standardization of Fuel and Lubricants Aids Allied Troops

Spectacular dash of Allied armor through France and the Low Countries was partly made possible by Ordnance-industry teamwork in developing more efficient fuels and lubricants, Major General G. M. Barnes declared in presenting the Ordnance Distinguished Service Award to the Coordinating Research Council. Inc.

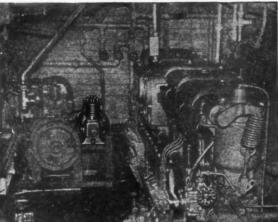
The Council, which is sustained jointly by Society of Automotive Engineers and American Petroleum Institute, received the award at a banquet meeting in the Hotel Washington.

General Barnes, who is chief of the Research and Development Service of the Office, Chief of Ordnance. revealed for the first time that a single grade of gasoline, 80 octane, now is used in all motorized land and amphibian equipment of the American

(TURN TO PAGE 200, PLEASE)

From Starting Marine Diesels to Operating Air-Powered Tools,





You Can Rely on CURTIS AIR COMPRESSORS

C loucester fishing boats go out in all weather—indomitable little vessels that brave the seas of the North Atlantic month in and month out. Like hundreds of other Curtis-equipped ships, one of the latest to be built for this exacting type of service is the "Thomas D," 96 ft. dragger which relies on a Curtis Air Compressor to start her Diesel motors—and these motors must start to bring the ship, crew, and catch safely into port.

Reliance on Curtis Air Compressors has been traditional for years—in many industries, and particularly in automotive service. For Curtis Compressors are designed to deliver an adequate supply of air at all times, to give you most efficient performance with longer life at lowest cost for maintenance and operation.

Today, air-powered tools will enable you to finish more jobs per day, help solve the manpower shortage, reduce your costs, and increase your profits. Write today for complete information on prices and priority ratings on Curtis Air Compressors for your particular needs.

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FOR TRUCKS, TRAILERS, AND BUSES



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WRITE FOR THIS

Don't blame the brake lining when the fault is in the drum! Replace with GUNITE Engineered Brake Drums. Eliminate your troubles, save your linings, and reduce brake maintenance costs by 50%. GUNITE Brake Drums do not flex on cam and anchor sides. Fade out and roll away, caused by expanding brake drums, are prevented. Linings will not glaze or

cook from excess heat with GUNITE beat-controlled, self-lubricated Brake Drums. GUNITE drums are supreme on any basis ... cost per mile, lining life, brake efficiency, interval between adjustments, or any other way you want to gauge them. Learn about GUNITE Brake Drums ... and use them! Brake stations — write for our new distributorship offer!

Over 900,000 Gunite Brake Drums have been made since 1928



GUNITE FOUNDRIES CORPORATION ROCKFORD, ILLINOIS

Остовек. 1944

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199

(CONTINUED FROM PAGE 198)

armed forces from jeeps to tanks.

General Barnes listed these specific accomplishments resulting from Ordnance-industry cooperation through the Council and signalized by the Ordnance award:

1. Development of a stable all-purpose gasoline suitable for prolonged storage under extreme climatic conditions, replacing seven gasolines lacking adequate stability characteristics, suitable for use in all land and amphibian vehicles, and releasing highoctane producing capacity for the air services.

2. Development of a heavy-duty engine oil for all military vehicles, available in three viscosity grades instead of 10 and satisfactory for use under all conditions.

3. Replacement of seven grades of gear oil by three.

4. Greases, similarly reduced in number of grades, which operate at extremes of temperature. 5. Development of rust preventatives, which preserve both in storage and shipment around the world the armed forces' motorized equipment, engine parts, gun parts, and other materiel.

6. Analysis of enemy fuels and lubricants for the two-fold purpose of advising Army Commanders as to what captured supplies can be used in American vehicles and evaluating the enemy's oil position.

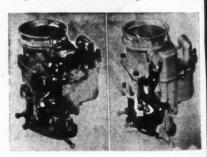
The award was accepted for the Council by its president, B. B. Bachman, of The Autocar Co., Ardmore, (TURN TO PAGE 272, PLEASE)

NEW PRODUCTS

(CONTINUED FROM PAGE 180)

P280. Zinc Cleaner

Zinctone, a quick chemical process for brightening and improving the corrosion resistance of zinc alloy die castings is a new development announced by Turco Products, Inc. of Los Angeles and Chicago. The Zinctone process seals the outer "skins" of the casting, helping to protect it from mechanical penetration and corrosive attack. At the same time, it produces a smooth bright surface which compares favorably with the finish produced by

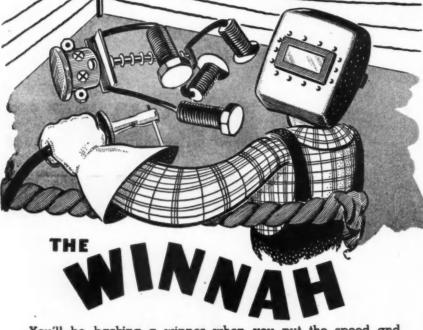


mechanical polishing or buffing. The Zinctone process does not change the color of the metal, but brings out a lustrous silvery bloom.

The process removes stains and corrosion, seals, passivates, brightens. So thoroughly is the process that many castings which would have otherwise been discarded may be restored for months of service. The illustration shows a carburetor before and after a Zinctone treatment.

The procedure makes use of simple, easily available immersion equipment. Already in extensive operation at many Army overhaul de-

(TURN TO PAGE 202, PLEASE)



You'll be backing a winner when you put the speed and economy of a Marquette A.C. Arc Welder to work on your

car or truck service problems.

For fast, low cost repair of cracked engine blocks and cylin-

der heads, damaged chassis members and body parts, the old fashioned methods requiring drilling, bolting, riveting, or dismantling and replacement with hard-to-get spare parts, haven't a chance against the streamlined efficiency of this modern technique.

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LOW INITIAL COST — LOW COST OPERATION NEGLIGIBLE UPKEEP — ALL ASBESTOS INSULATION — NO "MAGNETIC BLOW" — SUPERB ARC PERFORMANCE — 10 Models, 125 to 400 Amps. Completely Equipped

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"... All she remembers is that he had a terrific 'line'—
he must have been a Weatherhead Salesman!"

THE WEATHERHEAD "LINE" FITTINGS FUEL LINES DRAIN COCKS DASH CONTROLS BRAKE PARTS

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NEW PRODUCTS

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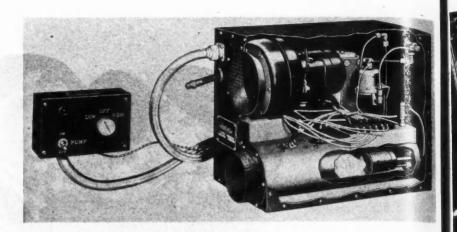
pots, the Zinctone process may be handled entirely by unskilled personnel.

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P281. Engine Preheater

A new idea in truck and bus heaters has been announced by the Fluid Heat Division of Anchor Post Fence Co. This combines the usual functions of cab heating and windshield defrosting, with the addition of trailer space heating and pre-heating of batteries, engine manifold and crankcase, as desired. Known as Model SAH this heater is made in several different sizes with outputs from 10,000 BTU/Hr. on low rate to 40,000 BTU/Hr. when firing at maximum rates. Control is remotely mounted.

The combustion process of vapor entraining successfully applied to aircraft heaters, is used. The heat exchanger has four compartments with "cross-over" passes between. Thus the flame and hot gases have a travel



of four times the length of the heat exchanger with the maximum area of heating surface exposed to the heating air. Combustion air is preheated in a tube which extends through the length of one exchanger compartment. The flame is completely suspended to provide freedom from lead or other formations without regard to the grade of gasoline used, and to insure longer life for burner parts. Fuel is drawn from the vehicle's supply tank.

The exchanger is constructed of stainless steel with gas-tight continu-

ous welded seams. There are only three moving parts—motor, fan, and a standard automotive type pump.

Mounted on wheels or skids it may be used for pre-heating engines of bulldozers, cranes, compressors and numerous other applications where heat is an aid to starting or operating. Current consumption is low and voltages of 6, 12 and 24 D. C., and 110 A. C. are standard.

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END

(Please resume your reading on P. 60)



We are doing our BEST to Supply KING ** ** TESTING EQUIPMENT **

To the past 30 years it has been our policy to give our customers prompt service. We have always striven to maintain this excellent record. Because of this we regret very much that we are unable, at the present time, to supply the demand for "KING" Testing Equipment. We operate under a WPB quota which enables us to make 100% of our 1941 volume of certain items while other items are frozen for civilian use. Dealers buy from "KING" Jobbers without priorities — Jobbers buy from us, within our quota limits, on WPB form 547 or PDIA.



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The ELECTRIC HEAT CONTROL CO. 9127 INMAN AVENUE . CLEVELAND 5, OHIO GOOD "KING" PRODUCTS SINCE 1914



with VICKERS Hydraulic POWER STEERING

Just two fingers turn the steering wheel and the front wheels follow exactly . . . the Vickers Hydraulic Power Steering System does the work instead of the driver. And this heavy truck steers just as easily over rough ground as on smooth pavement. No shock load can be transmitted from the front wheels back to the steering wheel . . . thus relieving the driver of considerable fatigue resulting from constant road shocks he must absorb with the conventional mechanical steering gear.

Among the many other advantages of Vickers Hydraulic Power Steering are: easy application to existing chassis designs, automatic overload protection for both steering linkage and hydraulic system, wheel "fight" is impossible, automatic lubrication, and 14 years of successful operating experience on trucks, buses, road machinery, etc. For all the facts about Vickers Hydraulic Power Steering, ask for the new Bulletin 44-30.

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-695

Co.

DURNAL

WASHINGTON RUNAROUND

(CONTINUED FROM PAGE 36)

Tanks Top the List

Another issue, this time inter-departmental, arose in ODT over a change in the Essentiality List for tire replacements. As originally conceived and issued, the List put tank truck operators in Class 1 and gave local and intercity motor freight carriers a 2A rating. The tank truck

operators are not under the jurisdiction of the Highway Transport Department; they are a section of the Petroleum and Other Liquid Transport Department. The higher rating tank trucks had received was opposed by the Highway Transport Department which made an issue of the matter and succeeded in having all truck operations under its jurisdiction with a 2A rating upgraded to 1. This overcrowding of Class 1 was not relished by the tank truck section. It accepted the challenge and quietly

proceeded to get the Army Air Forces to issue a directive entitling tank truck operators to a priority that topped everything on the eligibility list. The tank truck operators had a two-week use of the directive before the Highway Transport Department got wind of it and let out a howl. But the tank truck section was not disturbed. The directive had a life of one month, and it was certain to satisfy the emergency needs of tank truck operators.

Palace Revolution

And still another issue being drawn in ODT concerns what is spoken of as the "czaristic" attitude of the Regional Division of the High. way Transport Department. This division is charged with the adminitration of ODT orders and regulations. But instead of simply administering, it is charged with making interpretations to suit itself and without consulting or even informing the heads of other divisions directly concerned. It is charged that some of its interpretations have even been at variance with interpretations made by the legal department. One of the "trolley-car conductors" now heads up the Regional Division, but judging from all that has been brought to the attention of your reporter in the past, he has merely perpetuated a policy of long standing.

Allocation Individuality

ODT district allocation men were summoned to a meeting held in the Chicago regional office in September. How well they were indoctrinated remains to be seen. What brought about the meeting was the magnifcent individuality with which the allocation men were handling new ve-

(TURN TO PAGE 206, PLEASE)



The Gabriel Co., Cleveland, was awarded the Army-Navy "E" on August 25th. Presentation of the Award and "E" Pins was made by Major Lyle S. Richardson, and Lt. Commander J. P. Sturges. Acceptance on behalf of the company was made by John H. Briggs, president of Gabriel





URNAL

WASHINGTON RUNAROUND

(CONTINUED FROM PAGE 204)

hicle applications. ODT records showed that in percentage of approvals there was a 60 per cent spread between the highest and lowest district. The range, if we heard our informant correctly, was from 20 per cent to 80 per cent. The Regional director wisely called the meeting to straighten the boys out.

Extension Requests

The Allocation Section of ODT no longer will accept telegrams from truck dealers and branches requesting the extension of applications listed in said telegrams. Hereafter the applicant must write or wire his own request. In this way he will know what is going on.

Truck Switch Tip

And here's a tip fleet operators who wish to switch from the make of

truck specified in the certificate of transfer. They can get approval to make the switch—but only to a vehicle of comparable gross weight—by writing to the Allocation Section of ODT at Washington, D. C. Make it clear that the vehicle to which the switch is to be made is immediately available.

END

(Please resume your reading on P. 37)

Senate Passes \$1,350,000,000 Post-War Highway Bill

The United States Senate, on September 15, passed and sent to the House of Representatives an amended version of its post-war highway bill (S. 2105) which would:

- 1. Authorize \$450 million of Federal funds annually for each of the first three years following the war with \$200 million yearly for regular Federal-aid roads; \$125 million annually for urban highways and \$125 million annually for farm-to-market roads.
- 2. Require matching of 50 per cent Federal funds and 50 per cent state funds.
- 3. Allocate funds for regular Federal-aid roads on the historical formula of 1/3 area, 1/3 post road mileage and 1/3 population; allocate urban funds in the ratio which the population of municipalities of 5000 or more in any state bears to the total urban population of the Nation; allocate funds for farm-to-market roads on the basis of 1/3 area, 1/3 post road mileage and 1/3 rural population.

4. Eliminate proposals for use of Federal funds in purchasing land for rights-of-way.

- 5. Provide that at least 10 per cent of all Federal road funds shall be used unmatched for elimination of rail-highway grade crossing hazards, with railroads paying 15 per cent of the cost.
- 6. Provide a three-year total of \$140,250,000 for national forest and park roads and trails, not to be matched.

7. Provide that states not diverting highway funds shall receive Federal funds, even if unable to match them.

In the House of Representatives, the measure will meet the House committee-approved H.R. 4915, which proposes \$500 million annually in Federal-aid road funds for each of the first three post-war years.



when you clean garage floors with SOL-SPEEDI-DRI

THE fellow who hired a bulldozer to scrape up the oil and grease from his shop-floors (yes, it actually happened!) could have saved himself a lot of time, trouble, and money if he had simply spread SOL-SPEEDI-DRI, for this remarkable material soaks up oil and grease like a blotter soaks up ink. Even old, ground-in deposits give way to SOL-SPEEDI-DRI in time, restoring floors to near-new condition.

Meanwhile, fresh oil is kept off the floors, slipping accidents are eliminated, fire is retarded, and customer-relations are improved. You can toss your oily wrenches and other tools into a box of SOL-SPEEDI-DRI and when you want them again, they'll be oil-free. Thousands of shops are using this product to save themselves hours of back-breaking labor. It's great stuff! Write for literature and generous FREE SAMPLE.

SUPPLIERS: East — Refiners Lubricating Co., New York 1, New York.

Midwest & South — Waverly Petroleum Products Co., Philadelphia 6, Pa.

West Coast — Waverly Petroleum Products Co., Russ Bldg., San Francisco 4, Calif.



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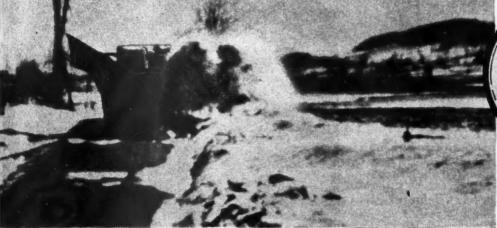
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THRU 3 FT. OF HARD SNOW







WIDENING-OUT

You clear more miles of snow per hour—open roads much faster—when powerful Walter Snow Fighters patrol your highway system.

These rugged units smash through road-blocking drifts—hurl snow far to the side—speed widening-out. They enable you to get snow cleared away before it packs and freezes into dangerous ruts. They gain you extra time for opening more miles of secondary roads, by clearing main highways faster. The Walter 250 H.P. Snow Fighter, for example, opens a 28 ft. width in ONE pass—clears a two-lane road in ONE round trip!

No other equipment can equal a Walter Snow Fighter in snow-removed-per-hour—because no other equipment has the unmatched power and traction provided by the exclusive Walter Four-Point Positive Drive. Three automatic locking differentials proportion the tremendous motor power to each of FOUR driving wheels according to their traction at any instant. There is no wheel-spinning, side-slipping or stalling to reduce speed.

For the complete story on Walter Snow Fighters, send for detailed literature.



Остепен, 1944

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Breaking away from standard formula and specification, Fuller engineers blazed a new trail in the manufacture of automotive transmissions. Through extensive design research they discovered that tooth-shape has a definite bearing on the strength and wear-life of the gear train . . . that proper shape produces a more quietly running set of gears, therefore, an easier shifting, longer lasting transmission. Today this is no longer a theory, but a well established fact which you will discover in those trucks equipped with Fuller transmissions. FULLER MAN-UFACTURING Co., Kalamazoo, Mich.

FULLER MANUFACTURING COMPANY, KALAMAZOO, MICHIGAN

Unit Drop Forge Division, Milwaukee, Wisconsin



No matter what makes of buses or trucks you operate, there are AC-engineered and AC-built Speedometer Cables for replacement service, either in complete cables ready for use, or in special kits with necessary parts and tools.

Twenty years of "know-bow"

Twenty years of "know-how"—twenty years of experience in meeting the factory equipment requirements of automotive engineers—have given AC Speedometer Cables the *utmost reliability*. That's why more and more fleet owners insist upon AC Cables for all replacements.

Standardize on AC, the equipment that gives you utmost reliability.

SPEEDOMETER CABLES

AC CABLES assure THIS kind of QUALITY

- Flexible cables made of highest grade steel wires on special, patented winding machines.
- ★ Flexible cables heat treated by patented methods to assure highest possible quality, which means:

Low whip Low internal friction Low torsional flexibility High torque strength

→ Built to meet the exacting requirements of car and truck markets.

BUY WAR BONDS -BRING VICTORY QUICKER

Truck and Bus Statistics Compiled by ODT

(CONTINUED FROM PAGE 41) operate slightly more than 56 billion miles per year. Approximately 6.9 billion gals. of motor fuel per year has been certified, representing approximately 8.2 mpg. of motor fuel for all commercial vehicle operators. The number of certificates issued is not to be confused with the number of operators, owing primarily to the fact that a certificate was issued for each power unit owned by operators of one or two such units; i.e., an operator with two trucks has been issued two certificates. Operators of three or more power units were, with certain very minor exceptions, issued only one certificate for their entire fleet.

Table 1 shows the number of certificates and equipment, annual mileage and motor fuel certified as of June 30, 1944, segregated into 22 broad vocational groups. The types of uses covered by each of these vocational groups is explained in de-

tail below.

Property-carrying vehicles account for 96.5 per cent of the certificates outstanding, 93.7 per cent of the power units, 86.2 per cent of the mileage certified, and 84.0 per cent of the motor fuel certified. Passenger-carriers and rental cars account for 3.5, 6.3, 13.8, and 16.0 per cent of the certificates outstanding, power units, mileage, and motor fuel certified, respectively.

Average miles certified per power unit vary from 6021 miles per year for trucks used for personal transportation (the bulk of these vehicles have been allocated mileage and motor fuel on the same basis used by the Office of Price Administration for passenger cars) to 61,874 miles per power unit for intercity bus operators. The highest average mileage for trucks is found in the for-hire tank truck group, which are certified an average of 50,017 miles per unit per year. Private trucks, influenced to a substantial degree by the large number of agricultural trucks, have an average annual certification of 8648 miles per unit, whereas for-hire trucks have an average annual certification of 20.-

469. The overall average for all trucks is 10,218 miles per year. Power units in the passenger carrier and rental car group average 24,399 miles per year, varying from 7145 miles per year for ambulances and hearses to the figure indicated above of 61,874 for power units of intercity bus operators.

On the basis of mileage and gallons of motor fuel certified, all commercial motor vehicles average 8.2 mpg. The average for all trucks is 8.4 mpg., with an average for private trucks of 9.1 and for for-hire trucks of 6.9 mpg. The range for trucks is from 11.4 mpg. for the "Personal Transportation" group to 6.3 mpg. for intercity common carriers. In the case of passenger carriers and rental cars the over-all average is 7.1 mpg. and within the group varying from 11.0 mpg. in the case of taxicabs, to less than 4.9 mpg. for local and suburban buses.

Of interest in connection with miles per gallon of motor fuel certified to commercial motor vehicles is the variation in this measure with population density. Classifying the total miles and motor fuel certified to commercial motor vehicle operators by each of the 142 Highway Transport Department District Offices on the basis of population

density of the area covered by each district office, the following figures relating to miles per gallon of motor fuel are obtained:

Population Density of ODT District Office Area (Persons per square mile— 1940 Census)	Average Miles per Gallon of Fuel
0- 49 50- 99 100- 149 150- 199 200- 299 300- 399 400- 499	8.9 8.5 8.1 7.6 7.8 6.9 7.1
500- 999 1000-1999 2000-2999 3000-4999 5000-5999	7.0 6.3 6.5
	Total 8.2

The variation from 8.9 mpg., in the case of ODT District Offices with less than 50 persons per square mile to 6.3-6.5 mpg., in the case of offices with the largest number of persons per square mile, results from increased necessity for stop-and-start driving, large mileage operated in mass transportation, concentration of fleets of heavy vehicles, etc., in the more densely populated areas and the fact that a greater proportion of agricultural trucks are found in the more sparsely settled areas.

Considering only property-carrying vehicles, the tabulation in Table II shows the percentage distribution of certificates outstanding, equipment, mileage and motor fuel certified as of June 30, 1944:

TABLE II

Vocational Group	Certificates Outstanding	Power Units	Mileage Certified	Motor Fue Certified
rivate:				
Agriculture	47.37	34,54	23.89	18.96
Government (other than institutions)	1.22	4.92	4.08	4.72
Extractive	1.21	1.94	2.73	3.13
Construction	9.53	9.10	7.38	6.66
	2.48	3.95	5.13	5,56
Manufacturing	4.38	7.71	9.22	8.99
Consumes Distribution	12.92	14.33	12.21	11.22
Consumer Distribution		1.87	1.62	
Other Public Utilities	.41			1.31
Business, Professional and Personal Service	3.12	2.75	2.11	1.88
Institutional Agencies	.31	.44	.29	. 26
Personal Transportation	4.56	3.22	1.90	1.39
Tanky Trucks (all private uses)	1.59	1.91	2.85	3.64
Not elsewhere classified	.06	.04	.01	.01
Total "other private"	40.57	47.26	45.43	44.05
Total—all private	89.16	86.72	73.40	67.73
or Hire:				
Intercity Common Carriers	1.44	3.27	9.95	13.28
Local Common Carriers	1.61	2.47	2.44	2.90
All Contract	7.63	7.23	12.68	13.85
Tank Trucks (all for-hire uses)	.16	.31	1.53	2.24
Total for-hire	10.84	13.28	26.60	32.27
Total-all property-carrying vehicles.	100.00	100.00	100.00	100.00

(Turn to Page 212, Please)





him top tire performance again.

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Mobawk's Free Flex Tire Repair Unit

Mohawk Tire Rebuilding Materials

The night and day tire production of Mohawk factories is swelling the supply of "rubber" for jeeps, trucks and countless military vehicles. Mohawk's tire rebuilding materials division is likewise busy turning out Free Flex Repair Units, Air Bags and Recapping Stock to help get the last mile out of truck and passenger car tires. Because of an overwhelming demand, filling of orders for these materials may sometimes be delayed.

Mohawk Rubber Co. Akron 6, Ohio



Needing no revision either is the memory of exceptional service given by Mohawk Quality Tires. When Johnny comes marching home, Mohawks will be waiting to give



TRUCK & BUS STATISTICS COMPILED BY ODT

(CONTINUED FROM PAGE 210)

In the property-carrying field agricultural vehicles, the most important single group, account for 47.4 per cent of the total certificates outstanding, 34.5 per cent of the power units, 23.9 per cent of the mileage certified, and only 19.0 per cent of the motor fuel. The relatively small importance of this group in the total mileage and motor fuel as compared with its large importance in certificates outstanding and power units results from the low average mileage per power unit (7067 miles), and the fact that the equipment is of lighter nature and operated predominantly in rural areas. All privately owned trucks represent 89.2 per cent of the certificates outstanding, 86.7 per cent of the power units, 73.4 per cent of the mileage, and 67.7 per cent of the motor fuel certified. Owing to the great importance of the agricultural group, the relative importance of all private carrier trucks in total mileage and motor fuel is less than in the case of certificates outstanding and power units. For-hire carriers, while representing only 10.8 per cent of the certificates outstanding and 13.3 per cent of the power units because of high annual mileage and generally heavy equipment and loads account for 26.6 per cent of the mileage and 32.3 per cent of the motor fuel certified.

In the case of the passenger carrier and rental car group, the percentage distribution is shown in the following table: service, their importance in mileage and motor fuel certified is only 9.5 and 8.8 per cent respectively. Taxicabs represent the largest single group from a mileage viewpoint, accounting for 37.2 per cent of the total but only 23.8 per cent of the motor fuel certified. Local and suburban buses account for 27.8 per cent of the mileage but are certified 40.2 per cent of the total motor fuel.

Coverage and Definition

In interpreting the foregoing data and making comparisons with other sources, the matter of coverage and definition must be considered. Under the Certificate of War Necessity program (General Order ODT 21 as amended) all commercial motor vehicles are covered. A commercial motor vehicle is defined as follows:

"The term 'commercial motor vehicle' means (1) (i) a straight truck, (ii) a combination truck-tractor and semi-trailer, (iii) a full trailer, (iv) any combination thereof, or (v) any other rubber-tired vehicle, excluding a motorcycle, propelled or drawn by mechanical power and built (or rebuilt) primarily for the purpose of transporting property, and (2) any bus, taxicab, jitney, or other rubber-tired vehicle, propelled or drawn by mechanical power, used in the transportation of persons upon the highways, or available for public rental, including ambulances and hearses, but not including a private passenger automobile."

Exemptions have eliminated certain vehicles covered by this definition; however, the Certificate of built or converted in accordance with outstanding ODT policy, and passenger cars available for public rental.¹

The foregoing definition includes as commercial motor vehicles, automotive equipment which is not registered in all or certain states in the general category in which the use of the vehicle would fall. For example, converted passenger cars used for the transportation of property are not registered as commercial vehicles in some states. Also, off-highway equipment is not registered at all. On the other hand, certain vehicles exempted from the Certificate of War Necessity program are registered as commercial motor vehicles. The extent of these items is not known; however, the total number of vehicles involved is relatively small.

The classification by vocational uses requires explanation. The actual classification employed by the ODT field force was on a detailed basis by which each operator was classified into (1) the general type of activity in which his vehicles were predominantly used-such as agricultural, extractive, etc.—and (2) the specific commodity transported or service performed. While the detailed classification permitted a total number of classifications of 1000, actual usage has been confined to about 270 vocational groups. The 22 group breakdown in Table I is a consolidation of these 270 groups. Detailed information on these detailed groups will be released at a later date.

(TURN TO PAGE 266, PLEASE)

¹ Excluded are commercial motor vehicles (1) operated by or under the direction of the military or naval forces; (2) operated by a dealer exclusively for the purpose of selling such vehicle; (3) a motor vehicle having a capacity of not to exceed seven passengers operated by a person between his or her home and place of work and used in transporting other persons between their homes and their places of work, if such motor vehicle is not used for any other purpose for compensation; (4) industrial equipment not designed for use on the highways-motor graders, scrapers, etc., used in construction or maintenance work — specialized equipment used in farm operations—farm trailers-trailers regularly drawn or powered by private passenger automobilesmotorcycles and motor scooters available for public rental; and (5) passenger cars available for rental under term lease of more than 30 days and a few other very minor exceptions.

TABLE III

Vocational Group	Certificates Outstanding	Power Units	Mileage Certified	Motor Fuel Certified
Imbutances and Hearses	22.61	15.43 26.64	4.52 9.47	3.20 8.84
'axicabe	42.89 27.22	24.67	37.17	23.84
tental Care 1	1.55 3.79	7.82 18.63	3.79 27.78 ²	3.37 40.18
ntercity Buses	1.84	6.81	17.27	20.59
Total	100.00	100.00	100.00	100.00

¹ Includes approximately 13,000 rental trucks for which certificates outstanding and mileage and motor fuel certified are not expanable.
² The local and suburban group includes approximately 2000 trolley coaches for which mileage has been certified but for which motor fuel has not.

From a certificate outstanding and power unit viewpoint, school buses are the most important single group. However, because of their relatively low annual mileage, and the fact that the bulk of their mileage is in rural

War Necessity program may be considered, with certain exceptions, as covering all trucks (including tractor trucks), commercial trailers, buses of all types, taxicabs, ambulances, hearses, passenger cars re-

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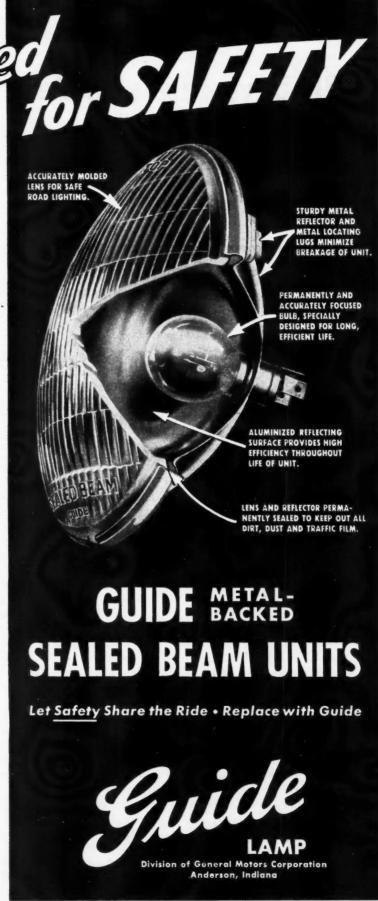
Guide Sealed Beam units make night driving safer through their double-protection feature . . . a bulb within the Sealed Beam unit. When the lens of a Guide unit is cracked, the bulb continues to burn brightly and efficiently until the damaged unit can be replaced. There is no lighting failure, no dangerous "one-eyed" driving, when a road accident occurs to the lens of a Guide Sealed Beam unit.

Correct for all '40, '41 and '42 cars, trucks and buses. Guide metal-backed Sealed Beam units are in demand because they give Sealed Beam lighting at its best. They are engineered for safety-built to provide double protection against lighting failure through accident to the lens.



Guide Sealed Beam replacement units and Guide lamp service parts are sold by United Motors Service distributors.

Give Till It Hurts the Enemy **Buy More Bonds!**



OF AUTOMOTIVE LIGHTING EQUIPMENT BUILDER

OCTOBER, 1944

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WPB Lays Plans to Revoke Production Controls

Middlekamp recommends revocation of all limitation orders under jurisdiction of Automotive Division on V-E Day

by GENE HARDY

Commercial Car Journal, Washington Bureau

HE operating divisions of WPB are well along in their plans for putting into effect its policy of abolishing almost all controls over materials when Germany falls.

Acting WPB Chairman J. A. Krug in announcing the plan said that there will be a reduction of about 40 per cent in war production within three months after the fall of Germany which will free over 4,000,000 workers for civilian production. WPB estimates that the cutback in the automotive industry and its component manufacturers will be higher than the overall figure, or close to 50 per cent. Mr. Krug also said that there will be plenty of steel, copper and aluminum available for all manufacturers who are in a position to manufacture civilian goods.

According to WPB, the only controls that will be maintained after X-Day are those that will be absolutely necessary to assure the defeat of Japan. There will be only one preference rating in addition to the present emergency rating. This will be reserved exclusively for military programs. All other production will be unrated. Manufacturers will be permitted to accept unrated orders but they will be obliged to fill rated

military orders ahead of all other business.

A few allocation orders for materials that remain tight, such as tin, lumber, textiles and certain chemicals, will be continued. Allocation of copper and steel under CMP will be continued only for the quarter in which Germany falls.

Meanwhile, the WPB Automotive Division has been actively engaged in its plans for self-liquidation. It has been revealed that the Division Director, Col. John H. Middlekamp, has recommended that all limitation orders under his jurisdiction be scrapped along with the orders that are to go. This will mean that the L-1, L-2, L-3 series of orders, restricting passenger car and motor truck production, will be abolished. In addition the following orders will also be dropped: L-158, Automotive Replacement Parts; L-180, Replacement Storage Batteries; L-270, Auto-Maintenance motive Equipment: L-314, Lubrication Equipment; and L-201, Automotive Tire Chains, Tractor Tire Chains and Chain Parts.

A nucleus organization will be maintained in all WPB operating divisions to iron out any problems on which industry may require help and to take care of any possible increases in military procurement.

Until Germany falls the "spot authorization" plan will continue to operate, but will be dropped at that time. At the time of this writing no authorizations, under this plan, have been granted to producers of automotive equipment. Special allotments of material have been set aside to be used by manufacturers allowed to produce under "spot authorization" procedures.

Colonel Middlekamp, denying all reports that he was to resign in the near future, told COMMERCIAL CAR JOURNAL that he will stay until the program is finished. Industry advisory and labor advisory committees will continue to function after the close of the European war.

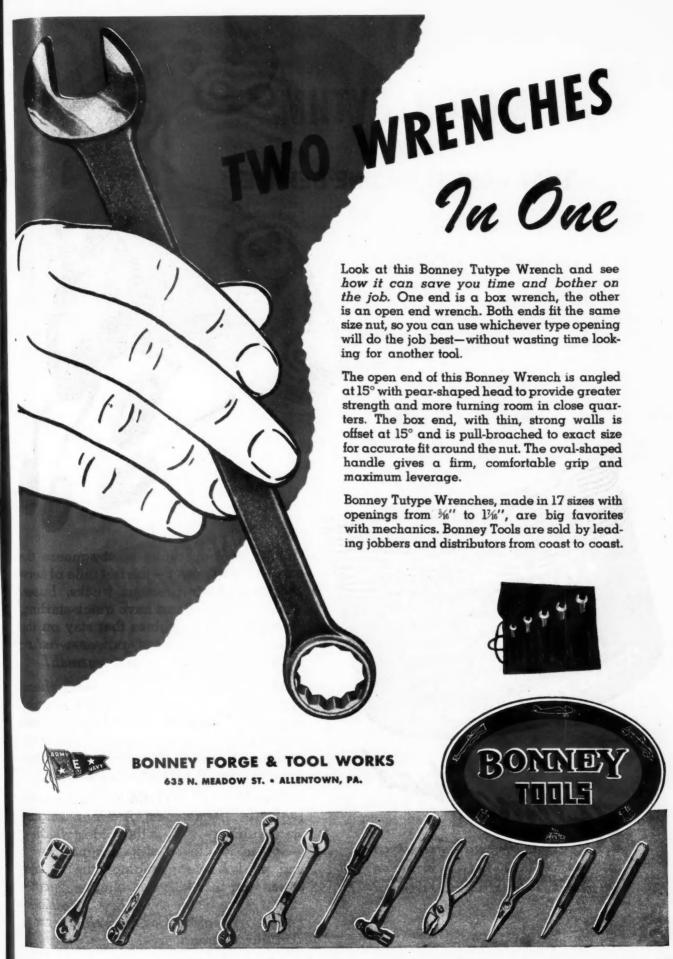
WPB estimates that with almost a 50 per cent cut in war production and the lifting of the bans on civilian production the industry should be able to turn out as many trucks for civilian use as were produced in the peak peacetime year or about 390,000.

At present, the truck program continues in high gear. The decline in production early in the year was largely made up during the third quarter, due to more manpower being made available in the foundries. Production will continue on an upward trend but the total civilian output still may not be realized. However, the loss will not be more than from 4 to 8 per cent. Third quarter output was greater than any previous quarter.

With remaining war production scattered throughout the country, WPB believes that it will be no longer necessary to maintain production quotas on parts and all other types of automotive equipment.

Official Washington is now breathing easier over the huge surpluses of parts that are supposed to exist. It is maintained that all the inferior parts have largely disappeared and that military excesses will be absorbed in maintenance of vehicles, whether they are sold as surplus or remain a part of a postwar military force. Not many spare engines are expected to be lying around, at least not new engines. There may be a considerable quantity of used spare engines.

WPB does not expect any radical (TURN TO PAGE 264, PLEASE)



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BUY MORE BONDS

Today, fleet operators must squeeze the last ounce of power—the last mile of service-from their precious trucks, buses, and cabs. They must have quick-starting, smooth-running engines that stay on the job - engines free of power-wasting carbon, gum, sludge, and varnish!

MOTOR RYTHM is the modern, chemical way to rid engines of these harmful deposits. It dissolves carbon binders, frees sticking valves and rings, stops bucking and ping due to carbon, protects engines against internal rust and corrosion.

Use MOTOR RYTHM in every unit regularly! Remember! A clean engine starts quicker—even in the coldest weather -and retains much of its original power and pep! A clean engine cuts maintenance and fuel bills . . . eliminates a lot of that costly down time! R. M. Hollingshead Corporation, Camden, New Jersey; Toronto, Canada.



Long before a stage galloped by at night you could hear it rattling up the valley and see its lanterns blinking along, warning other vehicles to keep clear. Proper lighting for safety after dark was important even then.

Today, National Safety Council figures show that most accidents occur after dark, and, of these the greatest single cause is improper lighting. Measured in terms of possible law suits, damage to equipment, and sometimes loss of life the cost of proper lighting is most insignificant.

Like the Tail Lamp shown above, all Arrow products are built to give long, satisfactory service . . . and to meet State and I.C.C. requirements. "For Safety After Dark" ask your Jobber salesman for Arrow Lights, or send for catalog.

FOR SAFETY

ARROW.

AFTER DARK

SAFETY DEVICE COMPANY, MOUNT HOLLY, NEW JERSEY



OCTOBER, 1944

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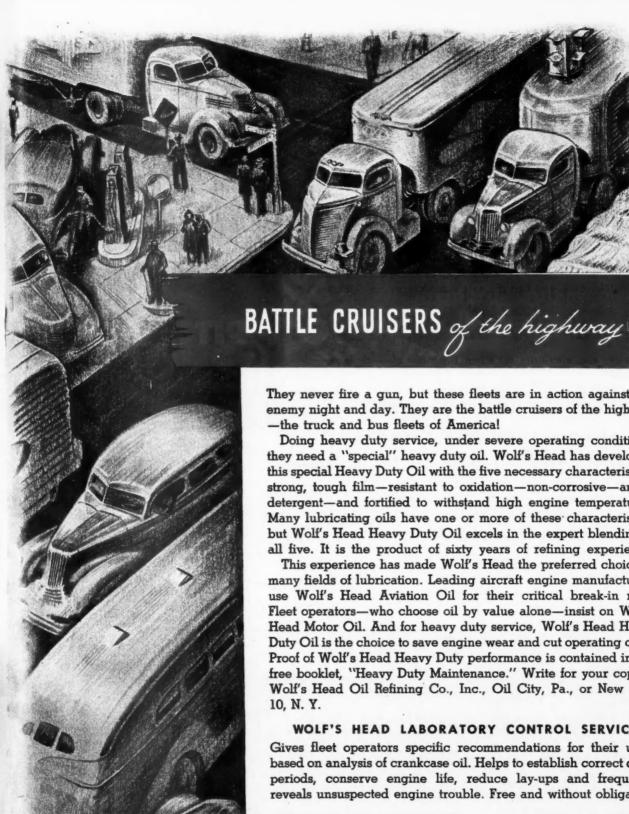
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They never fire a gun, but these fleets are in action against the enemy night and day. They are the battle cruisers of the highway

Doing heavy duty service, under severe operating conditions, they need a "special" heavy duty oil. Wolf's Head has developed this special Heavy Duty Oil with the five necessary characteristics: strong, tough film—resistant to oxidation—non-corrosive—amply detergent—and fortified to withstand high engine temperatures. Many lubricating oils have one or more of these characteristics, but Wolf's Head Heavy Duty Oil excels in the expert blending of all five. It is the product of sixty years of refining experience.

This experience has made Wolf's Head the preferred choice in many fields of lubrication. Leading aircraft engine manufacturers use Wolf's Head Aviation Oil for their critical break-in runs. Fleet operators—who choose oil by value alone—insist on Wolf's Head Motor Oil. And for heavy duty service, Wolf's Head Heavy Duty Oil is the choice to save engine wear and cut operating costs. Proof of Wolf's Head Heavy Duty performance is contained in our free booklet, "Heavy Duty Maintenance." Write for your copy to Wolf's Head Oil Refining Co., Inc., Oil City, Pa., or New York

WOLF'S HEAD LABORATORY CONTROL SERVICE

Gives fleet operators specific recommendations for their units, based on analysis of crankcase oil. Helps to establish correct drain periods, conserve engine life, reduce lay-ups and frequently reveals unsuspected engine trouble. Free and without obligation.

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MOTOR OIL AND LUBES



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There is nation-wide replacement services

DUPLATE Safety Plate Glass and Duolite Safety Window Glass are available promptly through a nation-wide system of Pittsburgh branches and dealers. Wherever you may be located, you can get fast replacement service by using safety glass by "Pittsburgh." These safety glasses are of proven quality . . . choice of leading equipment manufacturers and operators. So when you need glass replacements, ask for Duplate and Duolite by name.

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Look for these trade-marks, etched in the corner of the glass.

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"PITTSBURGH" stands for Quality Glass and Paint Safety WINDOW Glass
HI-TEST

Safety PLATE Glass
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This handsome bus model 29-BR-41, manufactured by the Flexible Company, is equipped with Duplate Safety Glass in the windshields, and Duolite Safety Window Glass in all other openings,





REAR AXLE STUD LOCKING RINGS

for TRUCKS

ENT COSTLY TRUCK DELAYS

provide the extra bearing, stop rock at tip and your stud troubles are over.



Remove standard nuts and studs. In-stall longer studs fur-nished with kit; replace axle, using old nuts.



Remove axle shaft "pull-out" stude.



Place lock ring against hexagon nuts and use lock washers and hexa-gon nuts furnished with kit. Draw up tight.

These patented rings — made of steel — come in kits complete with all parts necessary for one truck. These sets fit the following trucks:

No. 500 Chevrolet 1939-41 All 2-speed Timken Axles (Early '41 Taper Holes). 1937-41 All Eaton 2-speed. 1937-39 S, T, V Series. 1936 R Series.

No. 500A Late Model Chevrolet W. Y. M. Series 2-speed.

No. 501 Ford $1\frac{1}{2}$ Ton '39-'42, Transit Type Bus. GMC $1\frac{1}{2}$ Ton '35-'42. Federal $1\frac{1}{2}$ to 4 Ton Timken Axle. Reo $1\frac{1}{2}$ to 2 Ton '41-'42 Models 19 and 20. Autocar B. M. Timken '38-'44. White '35-'41 86, 86 Spec., 87, 510, 700-A-D-P-R, 704, 704 Spec., 804, 875 Spec., WA14, (Timken).

No. 502 International D-300, C-30, D-30, K-5.

No. 502A International DS-30, DS-300, DS-186T, DS-35, CS-20, CS-30, CS-35, CS-35T, CS-35B, D-35, C-35, C-35T, C-35B, D-35B, C-40F, D-216F, CS-40, DS-400, DS-40, CS-40T, DS-216T, DS-400, D-216T, D-400, B-4, D-40, C-40, C-40T.

No. 502B International K-7 Late Models.

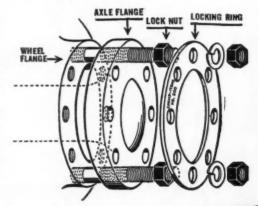
No. 503D Dodge Trucks (See Complete Listing No. 500 Series Specification Sheet). Stud Size—Standard 7/16" x 23/4". Flange Size O. D. 51/4"—Number holes 8. Bolt circle dia. 41/2".

No. 504D Dodge Trucks (See Complete Listing No. 500 Series Specification Sheet). Stud Size—Standard $\frac{7}{16}$ " x 2^3 4". Flange Size O. D. 5^{13} $\frac{1}{16}$ "—Number of holes 8. Bolt circle dia. 51/32"

List \$7.00 per Set

Packed individual sets of: 2 Lock Rings — all necessary special studs—lockwasher and nuts.

- The rear wheel stud nuts do not come loose as is commonly thought, it is the studs that come loose out of the wheel hub.
- The Locking Ring having nuts on both sides tie this into one unit making it impossible for studs to rotate or back out.
- This Lock Ring supports each stud and distributes the pull so that all the studs carry the same load.
- After this installation, you could not loosen or remove any one of these studs unless you removed all the outer nuts and Locking Rings.



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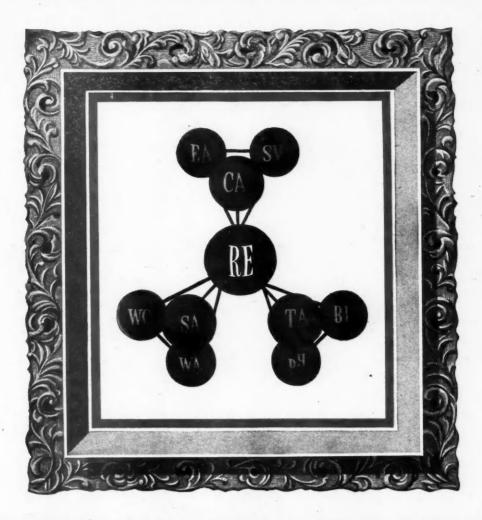
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PORTRAIT OF A CHASSIS BEING BATHED

Whether you are washing the exterior of a truck, removing carbon from a piston, or cleaning the upholstery of a bus, this is the picture of working factors in the scientifically balanced chemical compound. It is also the picture of a cup and saucer being washed. It is a cement floor being mopped. It is Turco in action.

The relative value and balance of all the factors is determined by RE; for Research and Experience are the directing agents. They assign roles, give to each agent the correct emphasis, balance them all (one factor does not insure effectiveness in a compound any more than one drug in a prescription). RE symbolizes two decades Turco laboratories have devoted to solving industry's vital problems in the conditioning, maintaining and cleaning of surfaces. Take advantage of it on everything from washing a locomotive to preparing aluminum for anodizing. Call the Turco Field Service Man, or write to Turco.

* For a fuller explanation of these vital factors, write for Turco's "The Chemistry of Chemical Compounds," on your letterhead, please.

- Emulsifying Action disperses grease and oil as tiny globules, suspends them, and prevents redeposition.
- Colloidal Activity disperses solids into minute particles easily removed,
- Saponifying Value is the ability to convert organic fats and oils into soluble soaps.
- Total Alkalinity (or acidity) is the total amount of either available for cleaning.
- Buffer Index is the ability to absorb either alkaline or acid soil to prolong solution efficiency.
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To the driver, these pistons mean more mileage from fuel and oil. The engine gives him smoother pickup and better performance. The lighter weight of LYNITE LO-EX PIS- TONS results in lower bearing pressures, assuring longer life.

OHIO pistons, long the favorites for replacement work, quickly disappeared from dealers' shelves as we turned 100%

to making pistons for military equipment. It's our hope to make them available to you soon. And they'll be better than ever, thanks to what we've learned on war work.



*Lynite and LO-EX are registered trade-marks of Aluminum Company of America, makers of castings for genuine Lynite Pistons.

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CLEVELAND, OHIO

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Think, man... the main defense any motor vehicle has is Oil!





RAFFIC MANAGER: "I notice, Jim, that the availability of our trucks has been better lately. Less motor trouble. How come?"



SHOP MANAGER: "Better oil, for one thing—we're using Quaker State HD Oil now. Better for our motors—helps us—and you."

TRUCKS today have got to last. Same with buses and other motorized equipment. The main defense they have against wear is OIL. Considering the work motor vehicles are called upon to perform, the most costly extravagance in their operation is the use of cheap oil. Taking everything into account, the better the oil, the less it costs. And the best oil is an oil that provides film that lubricates best and longest.

Quaker State HD Oil is that kind of oil. That's why more and more fleets of trucks and buses are using it. It provides lubrication that is long-lasting. And it contains a special detergent that keeps motors cleaner, more free from sludge, dirt, and trouble-making gummy "varnish."

QUAKER STATE ED OIL

AND QUAKER STATE SUPERFINE LUBRICANTS

Quaker State HD Oil for your trucks, buses and tractors



Quaker State Motor Oil for your passenger cars

QUAKER STATE OIL REFINING CORPORATION . OIL CITY, PENNSYLVANIA

A MESSAGE TO FLEET OWNERS



Controlled Flow is Essential to

Oil Cleansing

To cleanse oil of contaminants and asphaltenes before they can combine to form sludge, engine varnish, etc., requires time. Rate of flow and cartridge depth are the determining factors.

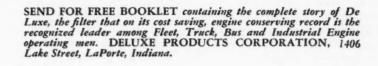
As the photograph shows the DeLuxe filter is engineered to control the flow of oil passing through it to the correct rate required for oil cleansing. Note that even at 40 lbs. pressure, the outlet rate is approximately 2 lbs. When increased to 50 lbs. the flow rate is practically unchanged. Flow is further controlled by the valve at the top of center column which permits the cartridge to be by-passed by the oil when it is too cold to be properly cleansed, and the DeLuxe cartridge with its exclusive collapse preventing spring and cone.

Adequate cartridge depth is provided in the DeLuxe filter by evenly feeding the oil at the base of the cartridge so that it must travel the entire depth of the cartridge before returning to the crankcase.

Important to the cleansing of any oil, this CONTROLLED TIME EXPOSURE OF THE

OIL TO THE CLEANSING ELE-MENT is vital to the cleansing of the new detergent type oils.







OCTOBER, 1944

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"This is Where Nuts Shake Loose,"

say over a thousand fleet operators

1.	Universal Joints	an	d			
	drive shaft flang	es			59.4%	
2.	Rear axle flanger	8			56.5	
3.	Spring clips				54.3	
	Bumpers					
	Body Bolts					
	Engine supports					

7. Wheels 8. Backing Plate to Axles . . 23.0 9. Clutch and brake . . . 13.7

and 52 other parts of the truck assembly, as well as 24 places in supplementary equipment.

1,160 Fleet Supervisors put their finger on the LOOSE NUT MENACE!

Loose nut trouble after the war?

"Not for us," say over a thousand fleet supervisors in a recent survey,* "we know where it occurs and we know how to stop it!"

They named more than 60 trouble centers where loose nuts cause breakdowns, time losses and expense. Three out of five named universal joints and drive shaft flanges as worst offenders.

Recently, the Boots Nut was tested on these trouble-making points. Twelve consecutive months of hard-driving wear and tear couldn't shake the Boots Nut loose from a single one of these vibration spots.

This is big news to all automotive executives to whom long life and high use factors are vital.

When 3 out of 4 operators of every type of commercial vehicle, including trucks, trailers, taxicabs and buses, call for a "good, all-metal, one-piece nut, which vibration can't loosen"... they're calling for Boots!

The all-metal Boots Nut with the built-in lock holds with a grip of steel . . . can't shake loose. Easily removed with an ordinary wrench. Can be used over and over again without accelerated locking loss. It's unaffected by oil, gasoline, water, chemicals, heat, cold.

Just now, all Boots are devoted to war plane production. But since it won't require any change in automotive design, Boots locked-in security can be expected on your very first post-war models.

SELF-LOCKING NUTS There's No Excuse for a Nut Shaking Loos



*OPERATORS. OF 110,000 MOTOR VEHICLES

indicated in this survey that if a vibration-proof nut like the above were standard on their post-war equipment, tens of thousands of dollars for maintenance and repairs would be saved.

Motion Picture—"All Work And No Play"— 16 mm. sound-30 minutes. Write for information



Haskelite PLYMETL **CONTINUES AS FIRST CHOICE**

On Basis of 16-Year Performance Record

The body shown, made for Schlumberger Well Survey Corp. by Mose-hart-Schleeter Co., Inc. of Houston, Texas, houses elaborate devices used in testing oil wells. PLYMETL was used for the side panels and doors, a choice dictated by the excellent performance of this material for the past 16 years. Over the roughest imaginable roads found in oil field country, PLYMETL has stood up remarkably well. A 7-ton van, in a recent instance, turned over, with very slight damage to the PLYMETL!

PLYWOOD PLYMOLD HASKELITE

PHEMALOID

Satisfactory past performance is always a sound basis for future selection. This explains the repeated choice of Haskelite PLYMETL by truck, trailer and bus operators, especially for applications requiring above-average durability.

The example cited—16 years of successful use under extrema road conditions - is typical. Throughout the motor transport field, this metal-faced, resin-bonded plywood paneling has given a good account of itself.

Unusually rigid and extremely strong (the result of plywood and metal construction) PLYMETL stands up under the day-in, day-out pounding of cross-country freight hauling...prolongs body life on city delivery routes . . . provides durable and low-maintenance bodies for local and interstate bus operators.

Other qualities which point to PLYMETL as the ideal material for body panels, doors, tailgates or inside lining are its exceptional light weight, its easy fabrication with a minimum of framing, its smooth, flat surface.

For full details on these and other PLYMETL features, write Automotive Div. No. 2.

DALLAS

CORPORATION HASKELITE MANUFACTURING

NEW YORK

PLYMETL

ar

URNIL

Grand Rapids 2, Michigan DETROIT CHICAGO In Canada: Railway Power and Engineering Corp., Ltd.

ST. LOUIS



NITE AND



Stainless steel high tension cable and copper cable.



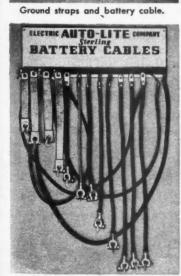
Spark Plug Cable sets in stainless steel and copper.



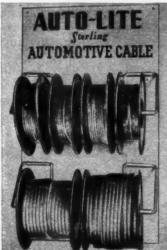


Primary wire in various sizes.





Pattery cable assortment.



Spool cable assortment.

- SPOOL WIRE
- SPARK PLUG WIRES
- BATTERY CABLES
- TERMINALS
- · LOOMS
- PORTABLE CORD
- **ASSORTMENTS**

Auto-Lite's wire and cable, famous for its low-cost dependability, is a complete line, built for every automotive use. Fleet operagarding its exclusive features by writing to their suppliers, or

THE ELECTRIC AUTO-LITE COMPANY

Merchandising Division TOLEDO 1,



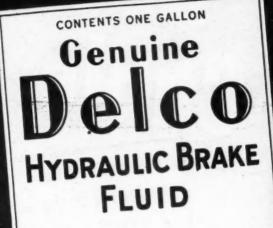
Loom in various sizes.



Combination wiring kit.

RNAL

KEEP HYDRAULIC BRAKES WORKING SAFEL





MORAINE PRODUCTS DIVISION
OF GENERAL MOTORS CORPORATION

For Victory
BUY MORE WAR BONDS!



Delco Brake replacement parts, Declene and Delco Super 9 are distributed by United Motors Service and Bendin distributes.



DELCO SUPER 9 BRAKE FLUID

Keep your fleet's brakes working safely—cut loss of valuable time spent in servicing brakes—by refilling with Delco Super 9 hydraulic brake fluid.

Safe for Metal and Rubber Parts— Delco Super 9 contains no corrosive ingredients that might affect the pistons or cylinder walls in the hydraulic system. It will not cause softening of rubber parts—safeguards against loss of pressure when brakes are applied.

An All-Weather Fluid with Good Lubricating Qualities—From 300° above zero to 50° below, Delco Super 9 remains safe and effective: No "vapor lock"—no dangerous thickening—no sticky gum deposits to cause jammed brakes, Good lubricating qualities protect moving parts from excessive wear.

For complete hydraulic service jobs, remove dirt and gum from the system by flushing with Declene flushing fluid, then refill with Delco Super 9—the safe, dependable, year-round brake fluid.

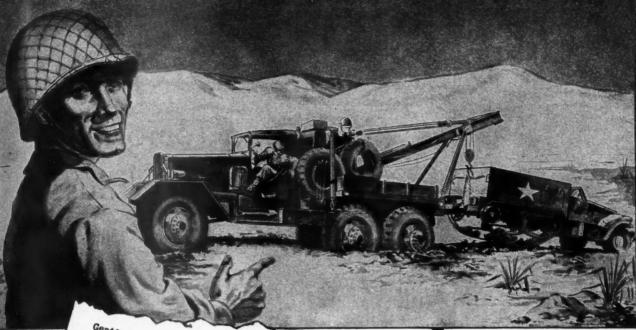
Delco

DIANE MONAIRE PRODUCTS

DIVISION OF GENERAL MOTORS CORPORATION

STANDARD FOR EQUIPMENT-THE STANDARD FOR REPLACEMENT

THAT'S MY POSTWAR TRUCK



Gentlemen:

An American Army officer told me of the hard knocks and strains encountered daily by some of your heavy equipyour well-known cegular Army mossible to negoty equiptible point of writing fitors, models supplied by one of concerning your vehicles.

I would especially like illustrature about ward Lafrance to comercial mount yourly like illustrations or specifications operated by one of commercial mount heavy-duty gasolines or specifications of statements. Any information over-tine and piesei lications pass into hands that isted any your assure mail me would appreciate that it will assure mail me would select the commercial may be vitally assure mail me would select the commercial means that may be vitally assure mail me would select the commercial means that is any power of the commercial means in the commercial means that is a possible solution in trucking problems.

Instructor, Operation

Heavy Transportation Equipment

This letter is typical of numerous unsolicited commendations, received from men who know trucks and who have seen Ward La-France military models at work at the fighting fronts.

We have been authorized to resume the manufacture of a limited number of civilian trucks during 1944, but, of course, military demands for Ward LaFrance trucks come first. When Ward LaFrance civilian models do become available, they will offer

an unusual opportunity to standardize on trucks known the world over for extra stamina and dependability... on a unique plan which no fleet owner will want to overlook. For further details, write our Sales Department today.

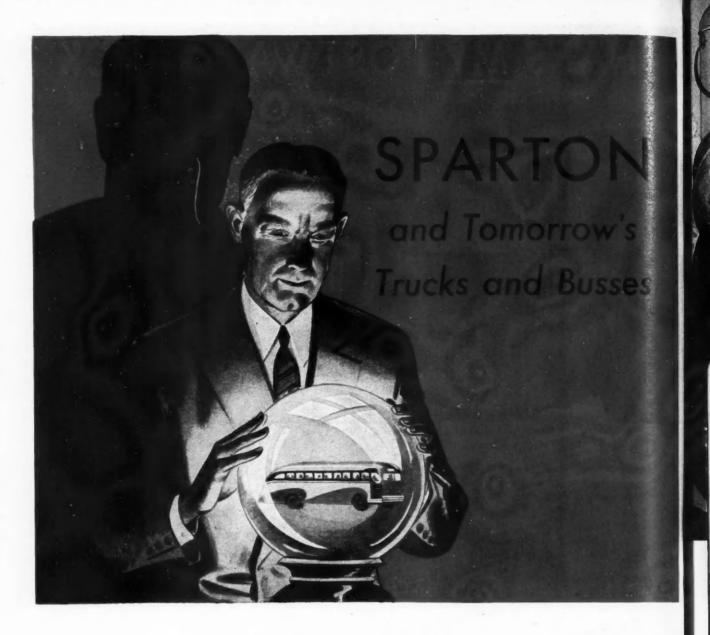


WARD LAFRANCE

TRUCK DIVISION

GREAT AMERICAN INDUSTRIES, INC. - ELMIRA, NEW YORK

URNAL



Buy Bonds Today for Peace Tomorrow

SPARTON - THE HORN HEARD ROUND THE WORLD

Maintenance engineers and service men will welcome the new heavy duty equipment to be built for "tomorrow."

For from war experiences and new discoveries will come important changes in design and engineering . . . each planned to improve service and operation.

There are great developments in Sparton warning signals. Sparton engineers working in close collaboration with U. S. Ordnance research built new high decibel output horns for combat and transport vehicles to withstand the tremendous stress of battle.

35 years of peacetime manufacture, making over 30,000,000 warning signals, plus production in two wars, are your assurance of automotive horns built to give unusual service for tomorrow's vehicles.

For complete data or engineering assistance on bus or truck warning signals, write.

THE SPARKS-WITHINGTON CO. . JACKSON, MICH.

Plant 1 . Jackson, Michigan

PRECISION PRODUCERS OF AUTOMOTIVE PRODUCTS SINCE 1900



PLATE BRACKET

Black enameled body, extra heavy black enamel steel license bracket.



heavy

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No. 70 GIANT-LITE

Ideal for trucks with rear doors extending full height of body. Angle bracket permits 4 different mounting positions.

No. 1292 KNOBBY REFLEX For trucks, busses or trailers-designed and constructed to with-stand the severest abuse. White, amber, red or green.



No. 600 SEALED BEAM FOG LAMP

With General Electric Sealed Beam Unit (Glaseal) Fog Lamp for use on medium and heavy motor trucks, trailers, passenger carriers, off-the-highway motor vehicles and motorized equipment. 6½ inch diameter, equipped with theft proof washers, victory grey finish on all models.



For trucks, passenger cars, trailers. Base curved and mounted on resilient pad—will fit most any surface—gasket seals lens and eliminates dust from inside lens and on bulb. Uses 1½ C.P. Bulb—50% more light—50% less current.



No. 1173 FLUSH TYPE CLEARANCE LAMP

Latest design lamp. Made of steel. Extreme height of 1½ inches. One piece, specially designed lens gives maximum amount of light—red, amber, green or white. Durable Udylite finish.

The trucking industry has been going the "Army and Navy way" ever since the war began. That way is leading to a speedy and decisive victory!

Proper installation of DO-RAY Safety Lighting and Reflecting Equipment on front, back and sides of all motor vehicles makes possible greater transportation efficiency—a vital force in the final blow that will crush the Axis.

DO-RAY Certified Products pass specifications of S.A.E. and I.E.S. meeting all I.C.C. requirements.

DO-RAY Safety Lighting and Reflecting Equipment have been selected by manufacturers for many United States Government mobile units.





Heed this warning before the storm

When trucks are stalled in winter's drifts it's too late to start thinking about tire chains. Limitations on manufacture of new chains will make chains hard to get if that big storm finds you unprepared or un-repaired. Fix up those old chains first, and fix 'em right, with new Pyrene cross chains and repair parts. Then, properly installed, they'll serve for miles and miles. Replace with new chains only when absolutely necessary.

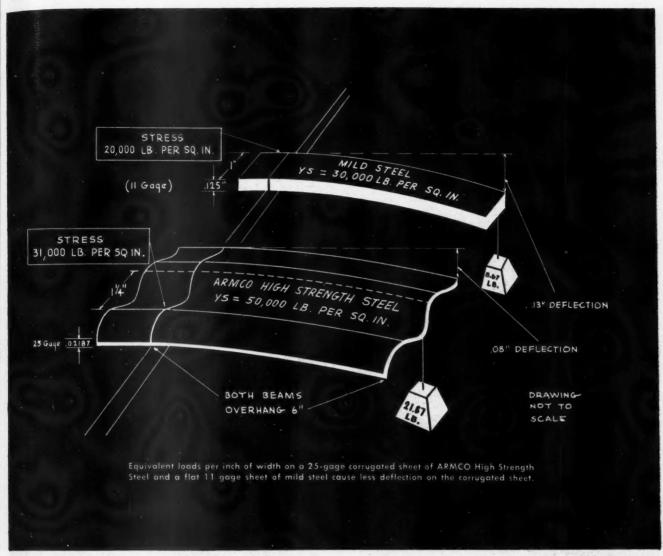
Pyrene Manufacturing Company NEWARK 8 · NEW JERSEY ATLANTA · KANSAS CITY · CHICAGO · SAN FRANCISCO

Affiliated with C-O-TWO FIRE EQUIPMENT COMPANY

PYRENE CHAIN GUIDE

Your Pyrene jobber has a new chart for you. Ask for it. It shows your drivers and shop men how to install and conserve tire chains. Get genuine Pyrene Chains and Repair-Parts from your jobber.





How these high strength steels can eliminate "DEAD WEIGHT"

Higher yield strengths of ARMCO Low Alloy High Strength Steels give engineers an opportunity to create designs that enable trucks and trailers to deliver greater payloads with less dead weight.

The drawing illustrates one method of utilizing these higher yield strengths. A thin 25 gage corrugated sheet of Armco High Strength Steel weighted with 21.67 pounds deflects less than a thick 11 gage flat sheet of mild steel weighted with an equivalent load per inch of width of 8.67 pounds. Because of its higher yield strength it is practical to stress the High Strength Steels to 31,000 psi. as compared to 20,000 psi. for mild steel.

This increased rigidity can be achieved in other ways than by corrugations. Sometimes the sheet is

ribbed or embossed, or separate ribstiffeners are used. These may be used in such forms as angles, channels or hat-sections. In monocoque, or "frameless" construction, the shell is usually reinforced against buckling by ribs or "stringers" between bulkhead rings.

Besides being stronger, ARMCO 50Y and 55Y High Strength Steels have greater resistance to atmospheric corrosion than ordinary steel.

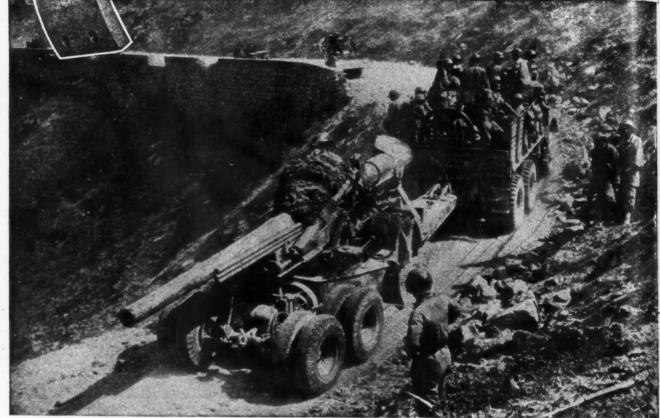
There are other Armco products to help you operate your fleets more profitably after the war... Stainless Steels for appearance, strength and rustless construction; Armco Paint-Grip grades for long paint life; and



ZINCGRIP for complete zinc protection of severely formed parts. For complete information on any of these special grades just address the American Rolling Mill Company, 3211 Curtis St., Middletown, Ohio.

THE AMERICAN ROLLING MILL COMPANY

BATTLE-TESTED OVERSEAS



Wherever the going is toughest, Johns-Manville Friction Materials have proved dependable

On the gigantic Army prime movers Johns-Manville Friction Materials are being battle-tested on every highway front and in every other type of war service, on jeeps, trucks and tanks, J-M Brake Linings are proving their dependability under every climatic condition.

This is the result of constant research in the extensive J-M Laboratories. There, J-M engineers have developed a group of highly efficient brake

linings, clutch facings, and brake blocks. Everything has been done to make these materials the safest, hardestwearing. Rigid proving-ground tests and actual operations have established how well J-M has accomplished its objective.

And now in overseas operations far tougher than anything they were ever actually designed for—J-M Friction Materials are proving they've got an extra margin of reliability . . . a plus that can spell safer, more efficient operation of your buses and trucks here at home.

For further information on J-M Brake Linings write: Johns-Manville at New York, Cleveland, Chicago, St. Louis, or San Francisco.

JM PRODUCTS

walks-manner BRAKE LININGS

FLEET-TESTED SETS

BRAKE BLOCKS

CLUTCH FACINGS

BOUSTANDER 1

A HIGH-PRESSURE AIR-OPERATED GREASE GUN

An outstanding unit for Fleet Owners...
Lubricates
Trucks, Tractors
and Trailers

DUST-PROOF . SPILL-PROOF

The Lincoln Powerluber is equipped with the famous Lincoln single-cylinder, full-automatic, compressed air-operated lubricant pump and dispenses lubricant from original 25 or 50-lb. refinery packages, or container will hold 60-lbs. in bulk.

Container and lid are made of heavy steel. Gasket fits snugly into lid which is held tightly in position by four screw-type bolts making the unit dust-proof and spill-proof. Carrying handles give easy portability, or a sturdy two-wheel truck can be furnished at additional cost. Get full information from your whole-saler, or write us direct.

"IT'S THE FINEST THAT MONEY CAN BUY"



LINCOLN

Pioneer Builders of Engineered Lubricating Equipment

701 NATURAL BRIDGE AVE. ST. LOWIS 20, MO. W. S. A



Why it will pay YOU to enter

The 7th Annual

TRAILMOBILE TROPHY CONTEST

August 1, 1944 - July 31, 1945

For best highway transport records of Safety, Service, Load-planning Improvement and Preventive Maintenance

REGARDLESS of the size of your trucking business, you have a good chance to win the Trailmobile Trophy or an Honorable Mention award! What's more, taking part in this contest will repay you in a business way. It will help you—

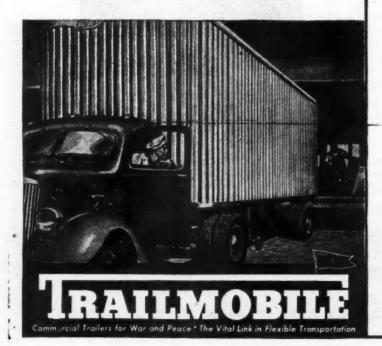
1. Step-up your net motor transport revenue and get more ton-miles of revenue.

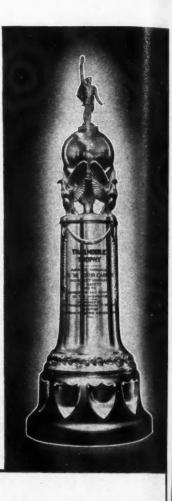
2. Make new friends . . . new customers . . . with better transport service.

3. Stimulate your manpower to more competitive, better effort.

4. Help the country's wartime transportation.

Decide NOW to enter the nation's outstanding contest for the trucking industry! Write for "HOW TO WIN" folder to American Trucking Associations, Inc., Washington, D. C., or The Trailer Company of America, Cincinnati 9, Ohio.





CONTEST RULES

Any property motor carrier may enter up to May 1, 1945.

Judges will be selected by The American Trucking Associations, and their decisions will be final.

Awards are based on reports attesting Safety and Service, Preventive Maintenance, Mile Reduction and Better Load Planning, for period beginning Aug. 1, 1944, ending July 31, 1945.

All statements should be simple, straightforward, and substantiated by company records. Include letters received from people assisted on the highways and evidence showing how better planning and loading made possible mile-reduction.

Final reports must be made to The American Trucking Associations, Washington, D. C., on or before September 1, 1945.

Awards will be announced at the 1945 Convention of The American Trucking Associations.

COMPANY AWARDS

GRAND PRIZE-The Trailmobile Trophy.

PLAQUES—awarded to the two companies whose achievements merit honorable mention.

DRIVER AWARDS

IDENTIFICATION PINS—one for each driver of each

CHEVRONS—drivers of the winning company are provided with handsome embroidered chevrons.

Here's what you accomplish when Every Vehicle in your Fleet has the SAME TYPE FUEL PUMP



The Autopulse Electric Fuel Pump is equally applicable to every vehicle you own—cars, trucks and buses—single units for light vehicles and multiple units for the heavier vehicles.

For that type of standardization, you need only a minimum inventory of spares or parts. And you won't have to wait for spare parts: because you can get as many parts or new or factory-repaired Autopulse units as you need and you can have them now.

In addition, with Autopulses on your vehicles you avoid road failures due to fuel pump trouble, you avoid cold weather starting trouble, your engines will not stall in traffic or when idling after a hard run.

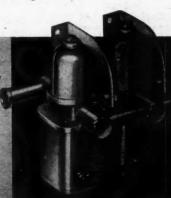
Your engines are always assured of adequate fuel for power to negotiate all grades.

Get in Touch with Your Jobber or Write Us Directly

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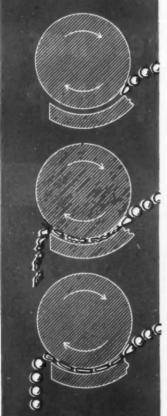
SINGLE

DOUBLE

JOURNAL

How does Lubrication

affect bearing life?

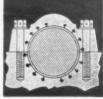


The vital importance of correct lubrication for bearings is one of many practical subjects thoroughly covered in the new 96-page Clawson & Bals' Engine Bearing Manual. Reproduced here are drawings from the section explaining how too heavy or too light an oil causes irreparable damage to engine bearings . . . and how the correct oil keeps bearings working at top efficiency.

> If you service or sell engine bearings, you'll want this valuable, helpful manual, whose contents include topics like The Bearing In Action, Causes of Poor Engine Performance, and The Selection of the Replacement Bearing, as well as convenient tables of crankshaft dimensions and bearing sizes.

> > For your free copy of the new C & B Manual, mail the coupon ... now, before you forget!





THE REALLY COMPLETE ENGINE BEARING AND CONNECTING ROD SERVICE



"Precision Lined" Type Thin babbitt lining only .002" to .005" thick. Increases bearing life 90%.



Reconditioned Forgings Complete line. Acccurately machined and aligned. Rigidly inspected.



"Aviation" Type Copper alloy. Re-sists high bearing pressures of heavyduty engines.



Rebabbitted Rods The pioneer rod exchange — millions of rods ready for instant service.



"Acid Proof" Type Exclusive with Ring-True. Eliminates danger of failure due to corrosion.



	CLA	WSON	&	BALS.	INC
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Chicago 16, Illinois

Company.

Jobber's Name

Please send my free copy of your Engine Bearing Manual.

Address.

City_ State.

Zone__

CLAWSON & B

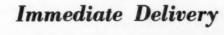
16, ILLINOIS CHICAGO

Factory Stocks in Principal Cities



Find out how Keystone Snow Plow Lights are making snow plowing safe. Hundreds of highway officials have found the answer.

Put these strong, weatherproof, easy to see warnings on your equipment and stop accidents.





& PARTS CO.

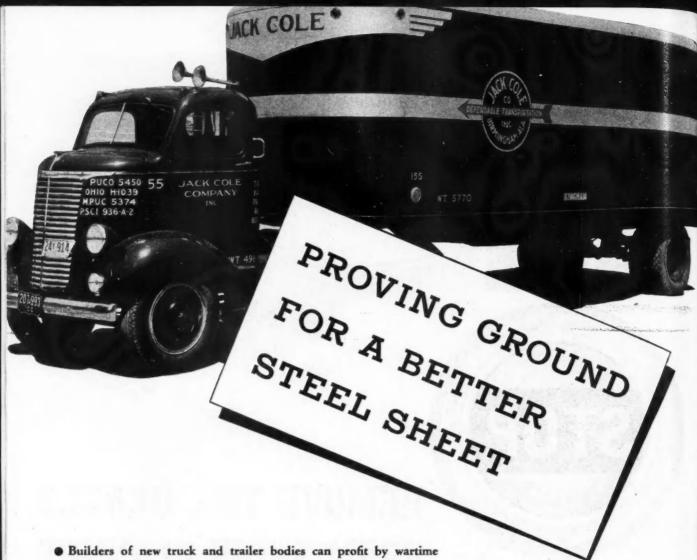
1446 W. HUNTING PARK AVE. PHILADELPHIA 40, PA.



OCTOBER, 1944

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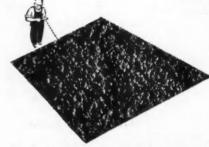


• Builders of new truck and trailer bodies can profit by wartime experience with Superior Galvannealed steel sheets. A popular pre-war material for transportation bodies, Superior Galvannealed is the reason behind many of the new looking, old bodies you see in service today.

Says one fleet owner, "These bodies have seen longer and harder service than we ever expected to give them, but after a trip to the paint shop they look like new. Those Superior Galvannealed sheets hold paint and don't let rust get a start."

A special heat-treated zinc coating gives Superior Galvannealed its advantages for truck and trailer bodies. (See illustrations at right). It's the material for bodies of the future.

THE SUPERIOR SHEET STEEL CO., CANTON, OHIO



Above • This microscopic photograph illustrates the "tooth" surface of Superior Galvannealed steel sheets. A patented heat treating process produces this ideal foundation for taking and holding paint.



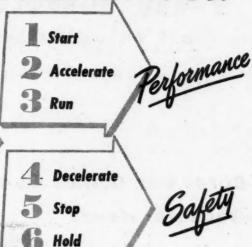
Above • Magnified many times, this microscopic view shows the iron-zinc alloy bond formed between the coating and base steel. This protection, together with the toothed surface, prevents rust forming under paint or other faich.



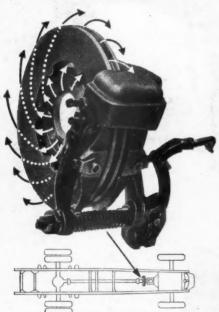
CONTINENTAL STEEL CORPORATION

6 THINGS A TRUCK OR BUS HAS TO DO:

LET
US
TAKE IT
FROM
HERE
DOWN



Developments in speed, power and efficiency of engine units are only half the problem of bus and truck engineering; the performance half. The other half concerns safety. And that's our business.



Made in four sizes with two or four shoes, TRU-STOPS are adaptable to small, medium or large trucks and buses. For specific information, write our Detroit office. TRU-STOP Emergency BRAKES are designed to give you more, smoother, safer stops. They are disc-type and operate on the drive shaft. Ventilated, they quickly throw off the intense heat of braking which is so harmful to linings. Even when linings have to be replaced, the job is a simple, inexpensive one.

Dependability—surplus braking power—longer life—lower maintenance cost—these are the advantages of TRU-STOPS. They are the advantages that make the truck or bus equipped with TRU-STOPS a better investment. They are the safety features that you'll want along with the advanced performance features in new equipment.

Before approving truck or bus specifications—investigate TRU-STOP Emergency BRAKES.



AUTOMOTIVE AND AIRCRAFT DIVISION

6-235 General Motors Building, Detroit 2 • 695 Bryant Street, San Francisco 7

a Division of AMERICAN CHAIN & CABLE COMPANY, INC., Bridgeport, Conn.



ESSENTIAL PRODUCTS • TRU-LAY Aèrcraft, Automotive, and Industrial Controls • TRU-LOC Aircraft Terminals • AMERICAN CABLE Wire Rope • TRU-STOP Brakes • AMERICAN Chain • WEED Tire Chains • ACCO Malleable Castings • CAMPBELL Cutting Machines • FORD Hoists, Trolleys • HAZARD Wire Rope • MANLEY Auto Service Equipment • MARYLAND Bolts and Nots • OWEN Springs • PAGE Fence, Shaped Wire, Welding Wire • READING-PRATT & CADY Valves • READING Steel Castings • WRIGHT Hoists, Cranes • WILSON "Rockwell" Hardness Testers In Business for Your Safety

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"VAN NORMAN No. 222

is the Most Valuable Machine in our Motor Shop!"

...says Fitchburg Motor Sales, Inc.

Girl Bores and Grinds Over 30

Con-Rods per Hour!

"For the past 4½ years we have been authorized Ford Motor Rebuilders. Recently we purchased from the Motor Tire Service Co. of Fitchburg a #222 Van Norman Connecting-Rod Reboring and Regrinding Tool. It has proved to be the most valuable machine in our Motor Shop.

"The machine turns out 30 to 40 rods per hour. And the operation is so simple that we trained a girl in ½ hour to grind Ford rods.

"Previous to the Van Norman tool we were constantly tied up for rods. Now we have a supply on hand at all times and our cost per rod has been substantially reduced." So says Fred Jahn, Treasurer of Fitchburg Motor

Sales, Inc., Fitchburg, Mass.
See your jobber today about getting a No. 222 Borer and Grinder, or about having him do your rod work for you, on his own No. 222. Or write direct to Van Norman.

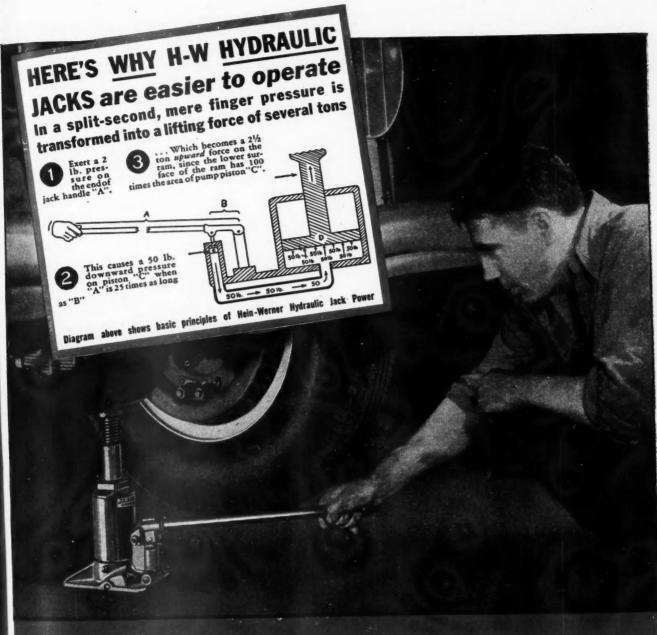


MINUTES on the Van Norman No. 222... which bores rods up to 3½", bores semi-finished babbitt-lined rods, and also bores wrist-pin holes in exact alignment with rod. No change in set-up from boring to grinding.

VAN NORMAN COMPANY

Automotive and Aircraft Service Equipment Division
SPRINGFIELD 7. MASSACHUSETTS

"It Pays to Van Normanize" with the Complete Heavy Duty Line



Super-Powerful ... Easy-Operating and Absolutely Dependable

HEIN-WERNER HYDRAULIC JACKS

Made in models of 3, 5, 8, 12, 20, 30, and 50 tons capacity

HEIN-WERNER MOTOR PARTS CORP.

OCTOBER, 1944

Line

JOURNAL

Use postage-paid card inserted in this issue for free information on advertised products

247



ASSOCIATED WITH UNIFORM QUALITY FOR OVER HALF A CENTURY



Reduce Damage Claims With Better Cargo Protection

Good tarpaulins protect you from costly weather damage. And in MT. VERNON Extra you will find maximum protection. Woven from top grades of cotton, MT. VERNON Extra has been the choice of wear-wise and weather-wise buyers of duck for more than half a century. The next time you order truck covers specify MT. VERNON Extra.

MT. VERNON WOODBERRY MILLS, INC.

TURNER HALSEY COMPANY

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CHICAGO · NEW ORLEANS · ATLANTA · BALTIMORE · BOSTON · LOS ANGELES · SAN FRANCISCO

YOUR OVER-AGE TRUCKS HAVE A BETTER CHANCE with <u>NEW</u> lighting wires



Primary wires—and all other automotive wires and cables—need frequent checking now that wartime conditions keep your trucks on the road longer hours and for longer terms of service.

Loose terminals, failing connections, and worn spots on primary wire insulations should be located and corrected before further vibration and abrasion lead to short circuits and serious damage. Defective wires should be replaced with Belden full-sized primary wire, specially engineered to resist vibration.

mary wire, specially engineered to resist vibration.

Belden products give you the extra service that means low cost per mile and minimum lay-up time. When ordering replacements specify Belden; available items are listed in the War Edition of the Belden Catalog.

Belden Manufacturing Company 4681 W. Van Buren Street, Chicago 44, Illinois

Belden Automotive WIRE

SPARK PLUG WIRES . BATTERY CABLES . PRIMARY WIRES

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OURNAL



"The fleet's in" may be welcome news to some people

but it is bad business when it applies to a fleet of trucks and buses laid up in the shop for repairs.

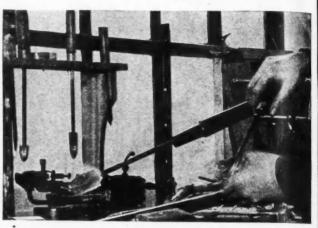
That's not likely to happen if your units are equipped with Purolator oil filters - and properly serviced. Purolators see to it that oil and troubles don't mix. They minimize engine repairs by removing their most common causes—dirt, dust, grit and grime. They keep motors safe by keeping oil clean.

But not even Purolators can keep functioning without proper attention. Filter elements must be changed regularly before they get saturated or clogged. A little care in that direction will save you a whole lot of cure. Of course, that's assuming that your trucks and buses have Purolator protection to begin with. If they don't, that's Job No. 1 on your preventive maintenance program. Purolator Products, Inc., Newark 5, N. J. Founder and leader of the oil filter industry.

BUY MORE WAR BONDS AND STAMPS NOW!



Flawless Soldering KEST SOLDERING



WORK IS FASTER-GUESSWORK ELIMINATED

- You can always depend on Kester Acid-Core Solder for perfect results. It makes permanent repairs that enable cars and trucks to keep rolling despite age and hard use. Kester Acid-Core Solder holds tight under vibration, shock, bending, contraction and expansion.
- Standardize on Kester Acid-Core Solder in your shop operations. It's easier and quicker to use because the pure, active flux is contained right in the core of the solder. You apply both solder and flux in one simple operation.
- Keep Kester Acid-Core Solder on hand alwaysyou'll do a better repair job, and do it faster. Order from your wholesaler.

A BUY WAR BONDS A

KESTER SOLDER COMPANY 4205 Wrightwood Ave., Chicago 39, Illinois

Eastern Plant: Newark, N. J. Canadian Plant: Brantford, Ont.







Our trade-mark's ancestor — the cigar store Indian — won lasting fame by advertising smoking!

But Big Chief WAUSAU makes heap big noise among piston rings by stopping smoking! By controlling oil pumping! By restoring the highest possible peak of performance . . . and maintaining it for added thousands of miles!

Re-ring with Wausau - and re-ring at the

first sign of smoking. For your trucks with good rubber are in for greater overloads than ever.

Wausau has the rings for any condition of cylinder wear — tailored sets . . . engineered exactly for the engine . . . distinguished by the amazing lubrication control of the Wausau Oil-Savr which is featured with every set.

WAUSAU MOTOR PARTS COMPANY
2400 HARRISON STREET WAUSAU, WISCONSIN



- INSTALL easily, quickly no fragile iron spacer to break.
- START easily no tricky tension, no running-in.
- PROVIDE freedom from carbonclogging — no slots to trap fuel and oil residues.
- INSURE long-lasting power an evenly distributed seal . . .
 easy on cylinder walls, prolongs ring tension.

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Solepairs espite tight

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Order

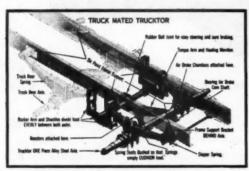
JOURNAL

Trucktors Relieve Truck Shortage ALL KINDS OF HAULING!

Much of the truck shortage can be relieved by converting four-wheel trucks into six-wheelers. The use of Trucktor Third Axles for this purpose permits an increase in payload up to double the amount allowed before conversion. And you can handle this extra business at lower cost—as many prominent fleet owners do.

Since a Trucktor installation is comparatively inexpensive and involves little maintenance, the extra payload per truck soon is practically an all-profit load. And the truck, while load-rated equally with multi-unit vehicles, costs less to insure—another substantial economy.

Trucktor Third Axles, being unrationed, require no priority or certificate of transfer. Ask your truck dealer or write us today for the full story.



TRUCKTOR REDUCES SIDESWAY

The only third axle with Six Point Suspension, Trucktor has two frame supports back of the axle that properly support the body overhang and reduce sidesway. These and many other exclusive Trucktor features are completely described in the Trucktor specification sheet. Write for it.

THE TRUCKTOR CORPORATION, 156 Wilson Ave., Newark 5, N. J.







SING McCREARY'S PRAISE!

THOSE FLEET OPERATORS Who keep a keen eye on tire costs sing the praise of McCreary Super Service and Super Transport Tires. They all say, "There's something about McCreary that rolls up more trouble-free miles at less cost per mile."

Of course, there's a definite reason for this performance. The best of materials superior heat-resisting rayon cord, the finest American-made rubber, processed under the most scientific methods-plus careful handling, without time-saving shortcuts that impair quality, provide stronger, more durable carcasses.

Each McCreary Tire is checked, inspected and rechecked more than 40 times in the process of production-more good reasons why McCreary Tires give more original miles—more recaps per casing—more

miles on each recap . . . and cost less.

POST-WAR ERA

od recap job delivered close to always met mileage expectancy. This was due to the fact that the Government for a considerable time could allocate only reclaimed rubber for recapping. However, with improved quality of rubber and application of new scientific methods, long earing recaps can be expected. Experts predict the volume of post-war recapping to triple the best pre-war years.

WRITE FOR THE NAME OF YOUR NEAREST DEALER

AND RUBBER

OCTOBER, 1944

URNAL

Use postage-paid card inserted in this issue for free information on advertised products



SKILSAW, INC., 5033-43 Elsten Ave., Chicage 30, III.

Sales and Service Branches in All Principal Cities









Replace cracked or discolored glass with L·O·F HI-TEST SAFETY PLATE GLASS

Hour after hour...mile after mile...your driver keeps his eye on the road.

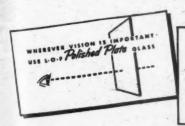
He drives according to what he sees. And that's why clear visibility is of first-ranking importance to greater safety—for your driver and your passengers or load.

Check your fleet for glass that may have become cracked or discolored—not only windshields but side and rear windows as well. Make replacements with genuine L-O-F Hi-Test Safety Plate Glass—the glass that is ground

and polished for maximum freedom from distortion.

If you do your own replacement work, call on your Libbey Owens Ford Distributor to keep you stocked with the more frequently needed sizes and shapes.

If you send your work out, choose a glazing shop that uses genuine Libbey Owens Ford Hi-Test Safety Plate Glass. Libbey Owens Ford Glass Company, 46104 Nicholas Building, Toledo 3, Ohio.





LIBBEY·OWENS·FORD
a Great Name in GLASS

MEN WHO KNOW

There's

PENNSYLVANIA

Silent Vacuum Cup Tire

PENNSYLVANIA RUBBER CO





You can cut body washing costs by large margins by providing a flexible, time and labor saving method of using the right kind of cleaner for varying degrees of dirt. Plan for the use of

MAGNUSOL and MAGNUS 55-P

-Magnusol for bodies where heavy deposits of oily dirt have to be removed and Magnus 55-P for bodies requiring only the removal of ordinary dirt and road film.

The installation involves two 30-50 gallon heavy duty welded tanks, one holding a solution of 55-P in water and the other the Magnusol solution. Lines from a compressor maintain a pressure of 60-100 lbs. in these tanks, so that solution from either can be obtained as desired, under pressure. Solution lines with shut-off valves and nipples for hose connection lead from the tanks to a position convenient to the wash rack and drain.

The solution best suited to the body being cleaned is sprayed on, allowed to soak in and brushed lightly with a long handled brush, if necessary. Then the surfaces are flushed off with water.

You can speed up your body washing operations and improve both quality and cost of cleaning by using this system for two cleaners, or modifications of it to suit your own lay-out. This whole question is very thoroughly discussed on Pages 21 to 25 of the Fleet Operators Cleaning Handbook.



Write for a Copy Today



MAGNUS CHEMICAL COMPANY - 38 SOUTH AVENUE - GARWOOD, N. J.

FLEET CLEANING MATERIALS

FLEET OPERATORS' WAR EXPERIENCE



PROVES VALUE OF 3 IMPORTANT



YORK-HOOVER BODY FEATURES

I

From the start of the war, fleet operators have had to overcome extremely difficult body service problems. York-Hoover bodies have consistently outlasted normal use because of their basic stamina incorporated, with a minimum of weight and hand-tailored design for the operators' specific job.

II

York-Hoover design is also based on considerations of quick and economical body repairs. Unit construction has proven its value under hard war usage.

Ш

Accurate interior dimensional requirements are studied with an eye not only to the immediate product to be carried but also to likely alternate needs.

These points of York-Hoover construction have produced excellent results under the severe tests of war conditions, both among fleet operators and in the special designs built for the armed forces.

Now that some body equipment is again available, why not talk over your replacement program with us—NOW?



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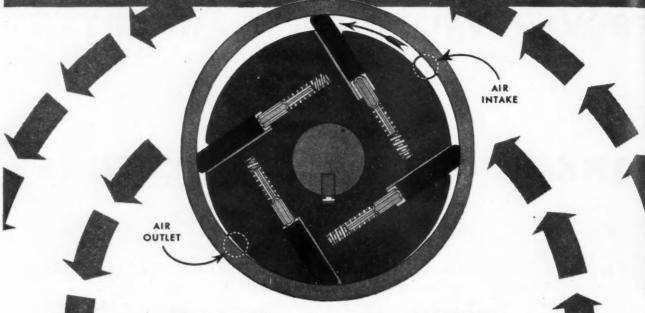
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WAGNER AIR BRAKES

The Only Air Braking System with the ROTARY COMPRE



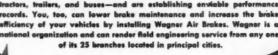
That's Why They Are FIRST in **Economy and Reliability**

The Wagner Rotary Air Compressor used in Wagner Air-Brake Systems is one of the outstanding developments achieved in the field of automotive air-brake equipment. This revolutionary type of air compressor utilizes the rotary principle to compress the air needed in the air-brake system, and its high efficiency is largely responsible for the absolute dependability of Wagner Air Brakes.

POINTS OF EXCELLENCE OF THE WAGNER ROTARY COMPRESSOR

- 2. Perfect running balance at all times.
- 3. Longer belt life due to more uniform torque loading.
- Low friction losses—therefore high operating efficiency.
- A predetermined air pressure automatically maintained.
- Operating parts are long-lived; consequently long life and low maintenance cost.
- 7. Extremely quiet in operation.
- 8. Self-contained oiling system—consumes a minimum of oil.
- 9. Compact-requires minimum installation space.
- Low operating temperature prevents carbon for-mation in the compressor and delivery lines.
- 11. Wagner Air Brakes are adaptable to all types of motive brake system

Thousands of Wagner Air Brakes are giving outstanding service on trucks, tractors, trailers, and buses—and are establishing enviable performance records. You, too, can lower brake maintenance and increase the brake efficiency of your vehicles by installing Wagner Air Brakes. Wagner is a national organization and can render field engineering service from any one



K44-5



Tagner Electric Corporation

6470 Plymouth Avenue, St. Louis 14, Mo., U. S. A. AUTOMOTIVE AND ELECTRICAL PRODUCTS



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and beg



75 EXTRA HP. into the same engine

Up...up...up the stiff grade comes this huge Walter Tractor...its side dump trailer loaded to the gunnels with iron ore from Minnesota's Mesabi Range.

With a war to win...this load and every load has to be a "full capacity" load...no less. And that means 70,000 lbs. gross.

Hard, heavy hauling it is—and it takes 300 horses under the hood to do it. All of that 300 horsepower and more...is there. But putting it there in the beginning was a decidedly rugged problem...

The catch was that no engine manufacturer made a standard engine for automotive service that would develop 300 hp. How to get it—without making "a special" engine with a completely new design.

That was one for Waukesha know-how.

But they're versatile, these Waukesha engineers. Taking a 6-WAK Waukesha Engine—a standard model—they adapted it to meet every specification and power need of this Walter 4-point positive drive tractor.

By the application of butane carburetion, the use of butane fuel, and some extraordinary engineering—an engine that ordinarily developed but 225 hp., as originally designed, now even exceeds the 300 hp. demanded.

For your future engine needs, consult Waukesha now.

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS.

NEW YORK • TULSA • LOS ANGELES



WAUKESHA ENGINES

Остовен, 1944

Use postage-paid card inserted in this issue for free information on advertised products

261



#158 HEAVY DUTY FLOOR CLEANER

Clean concrete floors, cut tire deterioration and speed up servicing, maintenance and repair work. Use a floor cleaner that really cleans floors clean... faster and easier!

IT'S A CINCH WITH KELITE NO. 158



This many-use new heavy duty cleaner with high, controlled pH, dissolves and loosens grease and oil deposits for a quick, easy flush-off.

Kelite No. 158 mopped on and flushed off once a week, means better "house-

keeping" and better production with real savings in tires, man-hours and materials.

Write Today for Full Information and Prices!

Tea	r Out	and	MAI	LN	ow.		
KELITE F	PRODUCTS	INC.					
909 East	60th St.,	Los Ang	eles 1, Co	aliforni	a		
						Chicago,	
	Perth Am	boy, Ho	ustonB	ranche	s in Princ	ipal Cities.	
Your Na	me						
Street A	ddress						
City and	State						
	Convelabled	1049 W	Ilia Bradu	ohn Ama			44450

American Made Trucks Are Bound for Berlin

With Allied offensives in Eastern and Western Europe rolling ahead at a rapidly increasing rate within the last few weeks, motor truck transport is being called upon to perform Herculean tasks.

And, according to front line news stories and photos, the majority of the Army truck equipment used in both France and Russia is American made. GMC Truck & Coach Division of General Motors, for example, has to date sent nearly 400,000 trucks and "Ducks" into the service of America and her Allies.

Starting with "D" day on the Normandy beaches, GMC "Ducks" have carried thousands of loads of men, munitions and materials directly from boat to beachhead. And, up until Cherbourg and other harbor facilities were repaired and opened for shipping, the mountainous quantities of supplies and equipment required by invasion forces were brought ashore by "Ducks" and other landing craft.

As the Germans were pushed back inland and Allied supply lines established, the "six by six" transport truck really came into its own. Often called the "workhorse of our Army," this sturdy vehicle is used in larger numbers by our Forces than any other type of transport vehicle.

While information from the Russian front is naturally less complete than from France, a recent report from Moscow stated that the bulk of Russian motor transport is made up of American made trucks. Russian supply lines are long and road conditions call for equipment that can "take it." Yet it is said that Red Army drivers have learned to admire American trucks because of their ability to go anywhere in all kinds of weather. A Moscow dated communique also reveals that Russian Armies are putting the versatile GMC "Duck" to good use in their drive toward Berlin. Thousands of amphibious trucks, according to reports, stormed across the Vistula river, the last great natural barrier between Russia and German Silesia.

While the main use of "Ducks" and trucks is for transport, overseas photos bring to light many other interesting uses for these versatile land and water vehicles. "Ducks" are often used to carry the wounded directly from field dressing stations to hospital ships. This eliminates the necessity for unloading and reloading at the shore line, adding greatly to the speed and comfort of the trip. Other "Ducks" were used by British and American Generals as mobile headquarters during the early days of the invasion. The "Duck's" ability to travel on land or water enabled these commanders to quickly contact various units on different sections of the beachhead. And Winston Churchill, in his latest report on the war to the House of Commons, referred to "the marvelous 'Duck' of American invention."

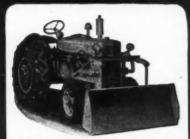
Trucks mounted with air compressors and other engineering equipment have been widely used in the construction of roads and bridges throughout newly won French territory. Other trucks, carrying complete machine shops, are used by Ordnance units to repair tanks and trucks, firearms and field guns. Still others pull 75 mm and 105 mm guns for the Artillery, help erect communication lines for the Signal Corps, carry blood plasma for the Medical corps, perform many different duties for the many other branches of the service.



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BAKER "BABY" BULLDOZER for **SNOW** or what have you?



For clearing snow from truck parking lots, runways, approaches and highways adjacent to warehouses, the Baker Light Bull-dozer, Model 282, mounted on an International wheeled tractor, is ideal. It has full hydraulic control and greater maneuverability. It gets in and out of corners -goes anywhereeasy to operatehigh capacity. When not moving snow, it has many other clean-up uses - leveling yards, filling holes, removing debris, etc. Ask for Bulletin 835.



Handling manure from 1200 horses at large Indiana farm—one of many uses for the Baker Baby Bulldozer.

THE BAKER MFG. CO.

571 Stanford Avenue
Springfield, Illinois



TRUCK & TRACTOR SNOW PLOWS

WPB PLANS TO REVOKE PRODUCTION CONTROLS

(CONTINUED FROM PAGE 214)

changes in design of any of the products of the automotive industry, although an improved line of products is expected, because of improvements adopted in producing war goods.

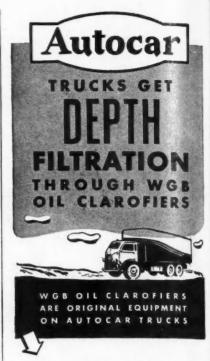
Manpower controls are also going to be slashed on V-E-Day. War Manpower Commissioner Paul V. McNutt has said that the required hiring of male labor through the USES and the fixing of employment ceilings will cease. The 48-hr. week will no longer be mandatory and will be continued only in war plants.

All WPB predictions are based on the idea that reconversion will come easy and not accompanied by great confusion. While the plan to lift production controls has been applauded by industry, there are many factors which might arise in specific localities that would bog down reconversion processes in indivdual plants. For example, labor with required skills may not always be available and components may slow up production in many cases. However, industrialists who have laid their cards on the table at WPB have expressed the desire to see controls lifted as quickly as possible, regardless of any confusion that may result, rather than continue under a system on government sponsorship that will become increasingly difficult to throw off.

Pricing of new goods also creates OPA Chief Chester a problem. Bowles has said that an attempt will be made to hold all prices of newly manufactured products at March. 1942, levels, but that consideration will be given to increased material and labor costs since 1941. Beyond this there has been nothing more announced on price policy. Several manufacturers who are now producing goods, that were previously prohibited, in the consumer durable goods line are going to sell at March, 1942, prices, with OPA blessing.

Dwight L. Armstrong, 50, vicepresident of the Armstrong Cork Co., and nationally known business executive and sportsman, died in Lancaster, Pa., September 10, after an illness of four weeks

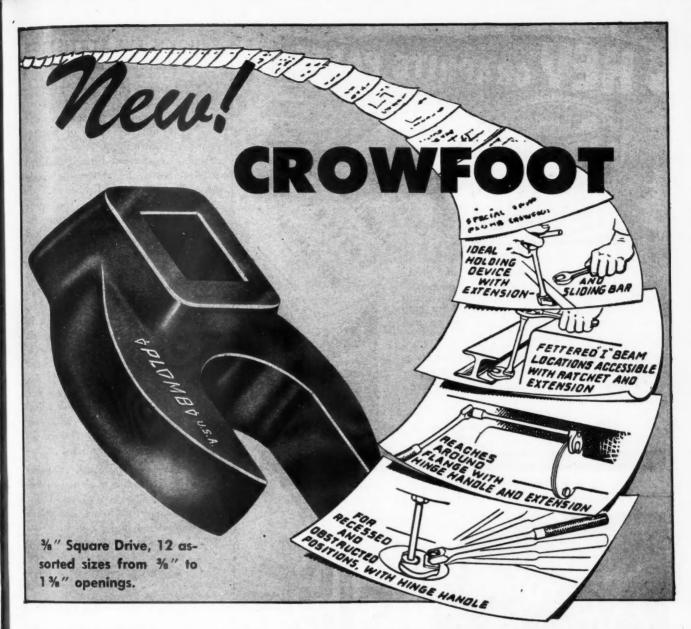




HEAVY-DUTY CONSTRUCTION, FOR A HEAVY-DUTY JOB

There is six-figure mileage in your engines, if their oil is protected by WGB Oil Clarofiers. They cleanse the oil completely . . . by depth filtration . . . by traveling it farther. Deadly sludge, acid, grit, and carbon are eliminated, in the way contaminated surface water is purified by seeping through deep gravel. A WGB Refill costs less than an oil-change, and replacement is quickly made by hand, without the use of tools. Specify WGB for life-time service. It will save you new parts, oil, and time.





WRENCH OF A THOUSAND USES

HELPS YOU LICK HARD-TO-GET-AT PLACES

Here's a new kind of wrench to bring you speed in getting around tough obstructions. It's the Plomb Crowfoot — originally designed for airplane needs but a time-saver for all mechanics.

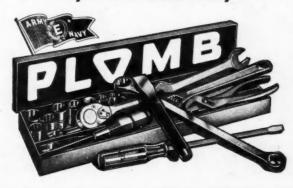
It combines open end utility with socket attachment flexibility — gives you many angles and positions where clearance is limited.

Add an assortment of Crowfoots to your tool set — your Plomb Distributor has them

FINE SERVICE TOOLS FOR ALL INDUSTRIES

in stock. See him today, or write for the name and address of the one nearest you. Plomb Tool Company, 2225 Santa Fe Ave., Los Angeles 54, California.

Buy a War Bond Today



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TRUCK & BUS STATISTICS COMPILED BY ODT

(CONTINUED FROM PAGE 212)

The classification of each operator was made on the basis of his responses to certain questions on the original application form (modified in some cases by statements made on subsequent applications). In many cases classification was quite simple; however, in numerous instances the operator indicated dual uses-in such cases the classification was made on the basis of further contact with the operator or the best available information. In all cases the classification was made on a predominant use basis (except in certain minor instances where an operator conducted mixed operations such as freight and passenger service or tank truck and dry freight operations in which case separate certificates were issued). This type of classification loses the specific use of vehicles in certain instances of mixed operations.

For example, an operator using trucks in connection with the manufacturing, wholesale and retail distribution (and all of such operations were conducted under common control) but where the predominant use on a mileage basis was in retail service, has been classified as a retail operator.

Classification Standards

A brief description of the standards used by the ODT field force in determining the classification so far as the 22 broad groups are concerned follows: (It is to be noted that in the case of tank trucks and for-hire carrier trucks, the classification departs from the specific nature of the operation, such as wholesale, retail, etc.)

AGRICULTURE: Farming, dairying, animal husbandry, fishery and forestry, not including, however, any logging or timber operations.

GOVERNMENT: Federal, State, county, local and municipal government, except government-owned public utilities or institutions performing substantially the same service as privately-owned utilities or institutions.

EXTRACTIVE: Mining, quarrying, (TURN TO PAGE 268, PLEASE)

Why Modern Business Needs the Modern Coverage of



Broadest Form Comprehensive Contracts Automobile and **General Casualty**

Owners', Landlords', and Tenants' Workmen's Compensation Comprehensive Liability Personal Liability Automobile Elevator Burglary Owners' and Contractors' Protective Manufacturers' and Contractors' Employers' Liability Garage Liability Contractual Products

Glass Damage

COMPREHENSIVE LIABILITY INSURANCE

American Auto's Comprehensive Liability Policy streamlines liability insurance for the modern business. While formerly the business man bought a number of separate policies, each designed to cover a specific kind of liability loss arising out of his business operations, now he can buy a single, all-purpose policy.

This one policy automatically adjusts its protection to meet practically every hazard of liability loss (known or unknown) arising out of the operation of a particular business. It eliminates guesswork, simplifies insurance purchasing, and assures adequate, all-in-one-policy protection.

It not only broadens the coverage as a whole, but eliminates the often costly imperfections of the outmoded piecemeal method of insuring against business liability hazards. In bridging the gaps against unforeseen or unknown liability, it becomes the modern policy for today's modern business."

In the American Auto Manner

To the buyers of insurance, the competent advice and personal services of an accredited Agent or Broker are considerations of paramount importance,

The accredited Agent or Broker counts it his first responsibility to determine that the insurance company he represents can and will faithfully discharge its policy obligations promptly, fairly, and cheerfully at all times.

American Auto is represented by accredited Agents and Brokers throughout the United States and Canada because it has the stability of position, the character of personnel, and a record of performance which commend its protective services to insurance men and insurance buyers everywhere.



SAINT LOUIS

NATIONWIDE BRANCH OFFICE FACILITIES

Atlanta • Baltimore • Boston • Chicago • Cincinnati • Cleveland • Des Moines • Detroit • Indianapolis • Kansas City • Los Angeles Milwaukee • Minneapolis • New Orleans • New York • Philadelphia • Pittsburgh • Portland • St. Louis • San Francisco • Seattle

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How to Expedite FOUR Jobs with ONE Material

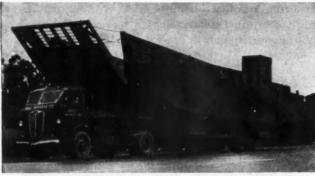
In your service shop you generally have these 4 jobs to do at one time or another: (1) Cleaning cooling systems, (2) Degreasing repair parts, (3) Cleaning motors and chassis, (4) Washing floors and work pits.

You can expedite handling them with ONE material, in most cases, by using Oakite Penetrant. Its effective solvent and penetrating action makes quick, easy work of removing oil, grease and dirt from all surfaces.

Oakite Penetrant is water-soluble, non-flammable. use involves no fire hazard. Full directions for benefiting from this time-saving detergent are given in FREE booklet. Write for your copy TODAY.

OAKITE PRODUCTS, INC., 26D Thames Street, NEW YORK 6, N. Y. Technical Service Representatives in All Principal Cities of the United States and Co





ESSENTIAL TO VICTORY

These 30 ton LCM type tank-carrying invasion barges are doing an essential job on the invasion fronts. Just as essential on the home front is the job of keeping trucking and transportation equipment out of the repair shop and on the road.

Winslow oil filter elements play a major part in the maintenance programs of some of the world's largest fleet owners and trans-

programs or some or the world's largest fleet owners and transportation operators. Scientifically designed and engineered to keep oil clean and keep engines clean, they effectively remove dirt, grit, sludge, acids and carbon without in any way harming the additives which give modern compounded oils their high efficiency.

Winslow replacement elements are available



OIL CONDITIONERS . ELEMENTS

With 10% Buv War **Bonds**

Be

100%

TRUCK & BUS STATISTICS COMPILED BY ODT

(CONTINUED FROM PAGE 266)

drilling, oil and gas production, logging, etc.

Construction: Construction work, maintaining or repairing buildings or structures or equipment, implements, vehicles, etc.

MANUFACTURING: Manufacturing of all kinds.

WHOLESALE DISTRIBUTION: Distribution at wholesale.

CONSUMER DISTRIBUTION: Retail delivery to consumers.

OTHER PUBLIC UTILITIES: All public utilities other than for-hire motor carriers, both government and privately-owned.

BUSINESS, PROFESSIONAL & PER-SONAL SERVICE: Finance companies, banks, insurance, real estate, advertising, domestic service, hotels, lodging places, motion pictures and other amusements, etc.

INSTITUTIONAL AGENCIES: All institutions such as hospitals, sanitariums, asylums, orphanages, schools, colleges, etc.

PERSONAL TRANSPORTATION: Personal or worker transportation. This usage covers cases such as a "pickup" truck used for driving to and from work, trucks used in the transportation of workers to or from a

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TANK TRUCKS: All tank trucks regardles of vocational use except for the subdivision between private and for-hire.

INTERCITY COMMON CARRIAGE: For-hire intercity transportation of property for the general public. Intercity is defined as all common carrier operations other than local (see below).

LOCAL COMMON CARRIAGE: Forhire local transportation of property for the general public. Local operations are defined as being (1) within an area which includes any municipality or urban community and a zone extending 25 air miles from the boundary thereof; or (2) within and between contiguous municipalities or urban communities; or (3) not more than 25 miles in

(TURN TO PAGE 270, PLEASE)



Mr. Hi-Q Helps Solve a Delivery Dilemma

Mr. Hi-Q: The boys tell me you're having delivery troubles. From what I've heard, I believe I can help you. Truck Owner: You mean on this bunch of battery failures we've been having lately? They're sure raising hob with my schedules.

Mr. Hi-Q: Tell me, have you ever considered standardizing on your manufacturer's highest quality batteries? That's one way you can eliminate a lot of grief and get more deliveries with your present trucks.

Truck Owner: Are these batteries really so much better? Enough so to justify their extra cost?

Mr. Hi-Q: Most folks who use them maintain that they actually cost less per mile in the long run. That's because they last longer, stand up better. You see, they're more sturdily made, with stronger plates, better separators and heavier cases. What's more, they're usually equipped with Fiberglas* Retainer Mats.

Truck Owner: I've heard about those mats, but what do they do?

Mr. Hi-Q: Standard tests show that they greatly reduce battery failures formerly traceable to shedding of power-producing material from the positive plates.

Truck Owner: Just how much do they reduce these

Mr. Hi-Q: Well, tests show that batteries equipped with Fiberglas are lasting up to twice as long as the same batteries without the mats.

Truck Owner: Say, I wouldn't be surprised but what you've got something.

Mr. Hi-Q: There's no question about it. You get some top-of-the-line batteries—Fiberglas equipped, of course—and see how they help your trucks stand up. You'll find your regular battery distributor

can supply you.

Owens-Corning Fiberglas Corporation,
1960 Nicholas Bldg., Toledo 1, Ohio.
In Canada: Fiberglas Canada Ltd.,
Oshawa, Ontario.



YOU CAN'T FIND A BETTER
BUY THAN THE BEST
BATTERIES—
FIBERGLAS-EQUIPPED



FIBERGLAS

BATTERY RETAINER MATS

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TRUXMORE

WORLD'S BEST



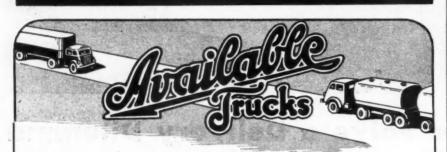


Write for Bulletin No. 34

"A TRUCK SHOULD BE A MONEY MAKING MACHINE"







FOR THE LONG PULL ALWAYS GET AN AVAILABLE

Engineered units that will net dividends and protect your investment.



11/2 to 50 Tons — Conventional or Cab Over Engine Models Gas or Diesel Powered

E. A. DOMES, Vice Pres. Phone Brunswick 1100 2501 ELSTON AVENUE CHICAGO 47, ILLINOIS ABLE TRUCK CO.

QUALITY TOOLS

QUALITY TOOLS forged and treated by master tool-smiths, for over 19 years, are properly designed and attractively finished.

Their careful uniform temper assures their daily uninterrupted use by thousands of satisfied skilled mechanics.

You, too, can enjoy the thrill of performance and the pride of ownership of a QUALITY TOOLS product.

See your distributor or write us direct. You'll be surprised at their modest cost. New instruments to meet new mechanical conditions are continually being produced.

. New Wilmington, Pa.

TRUCK & BUS STATISTICS COMPILED BY ODT

(CONTINUED FROM PAGE 268)

CONTRACT CARRIAGE: For-hire transportation of property not for the general public, both intercity and

AMBULANCES AND HEARSES: All ambulances and hearses, including other commercial motor vehicles used in connection with ambulance and hearse service, except passenger cars not available for public rental.

SCHOOL BUSES: Buses used by or for a school, public or private, for the transportation of teachers and students.

RENTAL CARS: All rental trucks and rental passenger cars, except those rental passenger cars rented for periods of more than 30 days.

TAXICABS: All taxicabs. Under the Certificate of War Necessity program a taxicab has been defined as any rubber-tired vehicle (1) propelled or drawn by mechanical power; (2) having a seating capacity of less than 10 passengers (including driver); (3) used in the call and demand transportation of passengers for compensation to or from points chosen or designated by the passengers; and (4) not operating on a fixed schedule, between fixed termini or over specific routes.

LOCAL AND SUBURBAN BUS OPERA-TIONS: All commercial motor vehicles used in common carrier bus operations (1) wholly within any municipality or urban community and a zone extending 15 air miles from the boundaries thereof, or between contiguous municipalities or urban communities, or (2) roundtrip schedules on which the average revenue per passenger carried is not more than 35 cents, or (3) roundtrip schedules whose principal traffic consists of the movement of workers en route between their homes and their places of employment, or the movement of persons between military or naval establishments and nearby municipalities or urban communities.

INTERCITY BUS OPERATIONS: All commercial motor vehicles used in common carrier bus operations other than local and suburban.

END

(Please resume your reading on P. 42)

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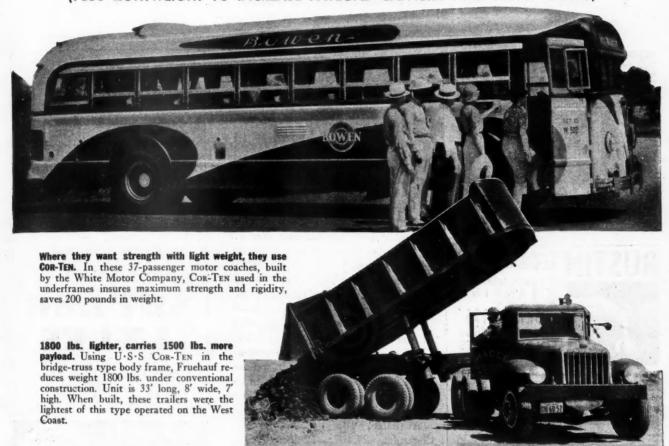
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42)

that only STEEL can give

(PLUS LIGHTWEIGHT TO INCREASE PAYLOAD CAPACITY AND LOWER COSTS)



U-S-S COR-TEN the pioneer high strength, low-alloy steel is now available for the more efficient construction of buses, trucks and trailers.

Builders of such equipment need no introduction to Cor-Ten. Ten years ago they found in Cor-Ten the ideal material for the safe and low-cost reduction of deadweight. They proved in thousands of vehicles that Cor-Ten increases safety, boosts payload capacity, helps to reduce the wear on tires and brakes, saves gasoline. That it makes repairs, when necessary, simpler and cheaper.

Used in the structural members of buses, the extra strength, the greater stamina and high resistance to im-

pact that COR-TEN assures—without increase in weight—is low-cost, permanent "safety insurance" that operators were quick to appreciate.

In hardworking trucks and trailers, the weight saved and the ruggedness added by Cor-Ten construction pays off in longer life, fewer breakdowns, and the ability to carry bigger loads

further, for less money.

As you prepare to meet postwar competition—and it promises to be tough—plan to give your equipment the added safety and higher earning power that Cor-Ten construction can insure. Our engineers will gladly guide you in its adaption to your designs.

U·S·S High Strength Steels

AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago and New York
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh and Chicago
COLUMBIA STEEL COMPANY, San Francisco



NATIONAL TUBE COMPANY, Pittsburgh TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham

United States Steel Supply Company, Chicago, Warehouse Distributors
United States Steel Export Company, New York

UNITED STATES STEEL



Pipe Bender That Bends Pipe Cold

TAL'S PIPE BENDER bends pipe %" to 3" dia. Produces smooth, uniform bends. Hydraulic principle makes it easy to operate with one hand. Compact. Portable. Eliminates elbows, fittings. Saves critical materials.

Faster, Accurate Drill Sharpening

Majestic Drill Sharpener sharpens drill edges sharp, evenly, clean-cut, 5/32" to 1". Dial for accurate work. Straight or taper-shank drills positioned in trough. Ends move in guided rath. Fits any grinder. Write for complete details.

AMERACO Industrial Specialties

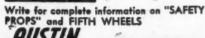
122 S. Michigan Ave., Dept. O, CHICAGO 3, ILL.

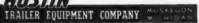


Sharpens drills 5/32" to 1", straight er taper-shank. Dial insures accurate work.











AMERICAN BOSCH

AVIATION & AUTOMOTIVE **ELECTRICAL PRODUCTS** FUEL INJECTION EQUIPMENT

American Bosch Corporation Springfield, Mass.

CCJ NEWSCAST

(CONTINUED FROM PAGE 200)

80,000 Medium Trucks Allocated for 1945

Authorizations for medium truck production for the first half of 1945 were announced by the War Production Board.

Automotive Division officials said the authorizations were allocated on an historical basis under a program calling for the production of 80,000 medium trucks. The years 1936 to 1940, inclusive were taken as the base period. A reserve of 4,000 vehicles, representing five per cent of the program, was set up from supplementary allocations were made to manufacturers whose true historical share was not a practicable minimum run.

The authorizations follow:

Available, 10; Brockway, 169; Chevrolet, 27,407; Dodge, 7,895; Dart, 4; Divco, 856; Diamond T, 1,715; Federal, 547; Ford, 23,238; Four Wheel Drive, 19; International, 8,098; Mack, 604; Reo, 1,890; Studebaker, 2,400; White, 758; GMC, 4,390. Total, 80,000.

"Red Ball Highway" Speeds **Supplies to Combat Troops**

A one-way, 200-mile speedway has been devised in France to enable supply trucks to keep pace with the fast-moving Allied combat forces, according to the War Department.

Since D-Day the Motor Transport Brigade, commanded by Colonel Clarence W. Richmond, of 1310 15th Street, Santa Monica, California, had been speeding food, ammunition, and gasoline to doughboys and tank squads. But when the breakthrough was accomplished and exploited by ground troops the supply forces began to experience difficulty in keep-

INNER-SEAL

WATERPROOF WEATHER STRIPPING



for PASSENGER COMFORT

BRIDGEPORT FABRICS, INC. CONN.

> Better—but not more expensive!

SHULER AXLES

SHULER AXLE CO. LOUISVILLE, KY.



G RUELING years of toughest service prove Blackhawk Hydraulies superior in safety, rugged dependability and utility, "Service - Proved" Sea 1 dependability and utility "Service - Proved" Be a found only on Blackhawka Only complete line of hydraulic hand jacks—model up to 50 tons capacity.

BLACKHAWK MFG. CO. Best, J11104, Milwaukee, Wis.





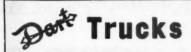






SPINNING POWER

built for REPLACEMENT SERVICE
GLOBE-UNION INC., MILWAUKEE, WIS.



HEAVY DUTY FOR OFF THE HIGHWAY SERVICE

— Specially Designed for — Coal Mining—Iron Ore Mining—Copper Mining—Pit and Quarry—Logging—Oil Fields—Etc.
It Coats Ne More for Trucks Specially Bullit to Rt Your Needs. Have Our Engineers Visit and Analyze Your Operation.

DART TRUCK COMPANY KANSAS CITY, MO.



ing up with the advances. As a result the new U. S. Army "Red Ball Express," probably the longest and fastest truck train in history, was inaugurated by Colonel Richmond and Brigadier General Ewart G. Plank, U. S. Army, Commanding General of the Advanced Section, Communications Zone, European Theater of Operations.

The highway is a giant loop that feeds one-way traffic of thousands of loaded trucks to the front lines and sends empty ones back to Normandy for more cargo. Trucks travel down one side of the loop and return on the other side. Every truck is labeled "priority" by a red disk on its front and rear. The same red ball is painted on the helmets of the special force of military police which controls the road.

To keep supplies moving steadily, trucks are moved in large convoys, maintaining a constant speed and regular spaced intervals. The convoys halt every ten minutes for a rest period.

In case of a breakdown, no truck holds up a convoy. The driver pulls out of line and repairs his truck while the others continue on. If he is unable to repair it, a "Red Ball"

(TURN TO NEXT PAGE PLEASE)

CLASSIFIED ADVERTISEMENTS

TECHNICAL ASSISTANT—Familiar with automotive engine construction and repair. Former service manager or junior engineer able to handle specification data and service bulletins for essential parts manufacturer. Detail your experience, vital statistics and income requirements. Statement of availability required. Box 62, Commercial Car Journal.

IMMEDIATE OPENING for young Chief Design Engineer who is a graduate mechanical engineer, experienced on automotive radiators, with established AAA-1 high production manufacturer of automotive radiators. Worthwhile salary. Sound peacetime future with resumption of automobile production. As this replacement opening is known in the organization, feel free to write in complete detail and confidence. Statement of availability required. Enclose recent (non-returnable) photo. Write Box 63, Commercial Car Journal, Chestnut & 56th Streets, Philadelphia 39, Pa.

WANTED: Men familiar with fuel and lubricant application in automotive fleets. Maintenance experience desirable. Give complete description of experience. Statement of availability required. Box 64, Commercial Car Journal, Chestnut & 56th Streets, Philadelphia 39, Pa.



LINK-BELT



ROLLER BEARINGS

Assure free rolling performance and long life service under today's severe conditions. Extra load capacity and self alignment are inherent features.

> Made by makers of the famous Link-Belt Silverstreak Silent Timing Chain.

945

LINK-BELT COMPANY
519 N. Holmes Ave., Indianapolis, Ind.

SPEEDIER SERVICING



Jones Portable Tachometers make possible quicker check-ups with greater accuracy.

Used by the world's largest operators of commercial vehicles for checking engine speeds from crankshaft, generators, or other exposed rotating parts; trouble shesting without accessity of road tests. A wide variety of ranges—lightweight and heavy duty; guaranteed calibration. Complete with 4" extension rod, convex and concave rubber tips, 12" circ. peripheral disc, center punch and carrying case... \$40 FOB Stanford, Coan.

Users include Seaboard Freight Lines, Standard Oil Ce. of La., N. Y., N. J., U. S. Army Air Forces, U. S. Navy, Socony Vacuum Oil Ca., General Motors Truck and Coach, American Fire Apparatus, Autoear Ca., Atlantic Refining Ce., International Harvester Trucks, Mack Trucks.

JONES MOTROLA

438 Fairfield Ave.

Stamford, Coss.







CCJ NEWSCAST

(CONTINUED FROM PAGE 273)

ordnance crew either makes the repair or assigns a new truck. The driver then waits on the side of the road until another convoy comes along. He rejoins his unit at a regular convoy exchange point at the Normandy terminal.

The "Red Ball Line" provides a bivouac area halfway along the road where drivers are changed. While the new drivers keep the trucks moving those who are relieved can bathe, eat a hot meal, and catch up on sleep.

Soft Woods Made Hard By Chemical Treatment

E. I. du Pont de Nemours & Co. announces that the chemical for treating wood by a new process—which virtually transmutes lumber into a new material—would be known as "Arboneeld."

Wood is transmuted by impregnating it with "Arboneeld" to impart to it entirely new properties and characteristics, L. F. Livingston, manager of Du Pont's Extension Division, said in an address before the Chicago Furniture Manufacturers Association.

The process which was announced last April makes soft woods hard, hard woods harder, minimizes their tendency to swell, shrink, or warp, and improve their durability and strength. It is the result of general long-range investigations con-





BALDOR

BATTERY CHARGER

Improved ventilation for cool operation, longer life and greater efficiency. They stand the strain of peak loads.

12-batt. size...\$28.00 less bulb

BALDOR ELECTRIC CO. 4340 Duncan Ave. St. Louis 10, Mo.





For maximum storage battery economy and performance in bus and truck operations specify Kathanode.

KATHANODE







THE ORIGINAL SPUN GLASS BATTERY
The Kathanode Corporation • Chicago, III.

OCTO

WHY WE RECOMMEND

THESE four steps insure built-in quality in TUTHILL Springs:

- 1. Material control based on analysis.
- 2. Heat treatment, pyrometer controlled.
 3. Shot-blasting with latest equipment.
- 4. Inspection and test for uniformity.

We make both standard and special springs. Specify your requirements.





"... pioneers in safety equipment"

lamps . mirrors . reflectors . flares

AMERICAN AUTOMATIC DEVICES CO. Harrison, Throop and Congress Streets CHICAGO, ILLINOIS

For a Smooth. Safe Ride at Lower Cost, Use

CLE-AIR

Hydrau-Matic Shock Eliminators

The Cleveland Pneumatic Tool Co. Cleveland, Ohio

HEAVY-DUTY Clutches Insure Maximum Clutch Life

- ★ 20 ball-hinged levers for uniform pressure, smooth engagements, easy disengagements. ★ Parallel disc contact. ★ No localized burning. ★ Long facing life.
- ★ Warp-resisting pressure plate.
 ★ Rigid cast iron construction. ★ Forced

internal air cooling.

Write for Full Information
Lipe-Rollway Corporation
Syracuse, N. Y., U.S. A.



AMERICAN STEEL FOUNDRIES notive Division, 400 N. Michigan, Chicago II

ducted over many years by the Forest Products Laboratory of the United States Forest Service, Du Pont and other groups.

The "Arboneeld" solution reacts with the components of the wood and forms a resin within its structure, making the wood hard, stiff. dense and durable.

Mr. Livingston pointed out that "Arboneeld" could bring wood products of greater beauty in their natural colors; wood products that will last longer, wear and scar less; wood with pleasing new colors, not only on the surface but all through the product; entirely new wood products; wood more resistant to surface damage and easier to repair.

Mr. Livingston said the process would enable manufacturers to use plentiful, low-cost woods instead of scarce, costlier varieties. He said "Arboneeld" wood could be worked more accurately, is more resistant to flame, rot, pests and chemicals; and that the new process would bring construction economies through the use of wood of greater strength and stiffness.

4 Government-Operated **Lines Return to Owners**

Release from Government possession and control of two additional of the 103 midwest truck lines taken over August 11 when a labor disturbance interrupted transportation, was announced by Col. J. Monroe Johnson, director of the Office of Defense Transportation.

The lines are Park Transportation Company, St. Louis, Missouri; and Dick's Transfer Company, Inc., Kansas City, Missouri. Their return was effected through issuance of an ODT order (Notice and Order of Termination No. 2) after both lines

· (TURN TO NEXT PAGE PLEASE)

UNITS AVAILABLE

2-AXLE DRIVE

19842 W. Eight Mile Rd. Detroit 19, Michigan

LOWER OPERATING COSTS

BRIGHT BEAM sowman Plastic LENSES

you have made a permanent replace-

shatter Proof • Color Fast • W Bowman lenses are:

Flexi Use Weather Proof • Economical • They have glass-like transparency—made in two colors, red and amber—are not affected by temperature changes. Ask your Jobber or order direct.

BOWMAN AUTOMOTIVE PLASTICS CO. 4316 W. 192nd Street, Cleveland 16, Ohio



Power Brakes

Positive — Instant — Dependable Braking at any Speed

DEALERS IN U. S. AND CANADA

VELVAC. INC. — DETROIT 16. MICH.

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You must get the MOST from your present track equipment to keep War Material moving.

equipment to keep war material noving.
Large capacity SNYDER (patented) Safety Fuel
Tanks will eliminate unnecessary refueling delays.
By the use of the Flame Guard Safety Valve (standard on all Snyder tanks) added protection is
afforded against fire hazards. Capacities range
from 28 to 50 gallons in the cylinder type; 75 to 125
gallons in the saddle type. Approved by the Underwriters' Laboratories. Inc. writers' Laboratories, Inc.

Distributed in all principal cities. Write for descriptive literature.



BUFFALO, N. Y.

TRAILER & EQUIPMENT CO., Inc. 2104 E. 10th St., KANSAS CITY, MO.





WHEELERS for 11/2 to 5 Ton Trucks



Greater tonnage . . . more profit. Increase carrying capacity up to 20 tons. Extend frame to any desired length. Load kept in perfect belance . . no teeter or end-sway. Simple, sturdy, no intricate parts. Timken bearings; steel castings hydraulic brakes. Easily installed in 8 hours. 3 sizes. LOW COST. No priority rating required.

Also makers Little Glant Frame Exten-sions, Hand Hoists, Wreeking Cranes

Write for Circulars, Low Prices

LITTLE GIANT PRODUCTS, INC.

1532 No. Adoms

» Peoria, Illinois

CCJ NEWSCAST

Dept. CC

(CONTINUED FROM PAGE 275)

had complied with orders of the Nation War Labor Board, Colonel Johnson said.

Two other lines, both in Iowa, were released last week following determination that no existing labor dispute was involved in their opera-

New "Know-How" Manual Issued by Thompson

A new 250-page "Know-How" manual, prepared by Thompson Products, Inc., Cleveland, and aimed at helping thousands of inexperienced men and women who are doing wartime automotive maintenance work, is now being distributed to the trades through Thompson Products jobhers

The "Know-How" manual takes the place of the company's larger and more technical Repair Tune-up Manual for the duration. Primarily it is a bench manual that gives short-cut procedures for tearing down and re-assembling the parts of an engine or chassis. It was patterned after the "G.I. Joe" military manuals that teach, for instance, how to quickly take a machine gun apart and put it back together.

(TURN TO PAGE 278, PLEASE)



KOETHERIZING

The one best way to restore collapsed pistons to original factory fit.

Every pulled piston should be Koetherized.

KOPPERS COMPANY American Hammered Piston Ring Div. BALTIMORE, MD.

HEAVY ONES for LIGHT ONES

Ford. Chevrolet or Dodge 11/2-ton trucks can be converted to heavy-duty Four-Rear Wheel Drive Trucks.

THORNTON TANDEM CO. Michigan Detroit



The KINNEAR MFG. CO. 2100-20 FIRLDS AVE., COLUMBUS, OHIO

FOR BUILDINGS - the recognized leader

CHARGERS HAVE



Gone To War

BRTT Oc:

For the Duration . . . we will not be able to supply Valley Chargers to out many customers and propects because our war production demands, otherwise take up our entire facilities.

nember Valley Chargers . . . when we can again ity you with these simple, efficient and economical ery-charging units.



VALLEY ELECTRIC CORP.
4221 Forest Park Blvd., St. Louis, Ma



FIRE-BUGS won't light here

IF A FIRE-BUG sat down here, he wouldn't have a chance. For this truck seat is protected with upholstery fabric that is Flameproof. It's Du Pont's fire-resistant P. C. "Cavalon."*

Something new?—A wartime development! Produced by Du Pont technicians for aircraft seats. This fabric meets Army Air Corps Specification #12026-A. That's why fire-resistant P. C. "Cavalon" is on active duty all over the world. Making flight safer for American fighting men.

After V-Day, fire-resistant P. C. "Cavalon" will come home to serve in theatres, restaurants, trucks and busses—everywhere that heavy-duty upholstery needs protection from fire. You'll find it the same rugged, good-looking, long-wearing P. C. "Cavalon." But seasoned in battle—fire-resistant—better than ever! E. I. du Pont de Nemours & Co. (Inc.), "Fabrikoid" Division, Empire State Building, New York 1, N. Y.

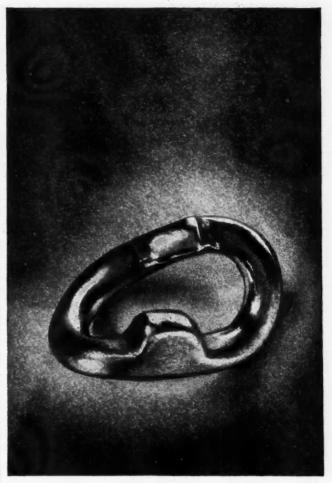
*P. C. "CAVALON" is Du Pont's trade mark for its plastic coated fabric.

P.C. "CAVALON"

plastic coated fabric



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



LINK TO SAFETY

It's the exclusive* saw-toothed lugs that make Campbell Lug-Reinforced Tire Chains radically different! They assure positive traction: make possible safe starts and stops without dangerous, rubber-chewing slip and skid. Tough, hard-wearing steel, and one-piece construction, mean increased chain mileage. International Chain & Mfg. Co., York, Pennsylvania.



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"FIRE Makes BIG Accidents Out of Little Ones!"

AMERICAN SAFETY TANK CO.

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THEM ROLLING''!

Buell High Pressure Air Horns speed up schedules. . . keep the highways open so that a steady cruising speed is maintained. 12% better road time is the result!

AIR COMPRESSOR
Why not investigate the
possibilities of the Buell
Air Compressor for your
Post War Plans. The
many ways in which it
can serve your needs
may surprise you. Put air
to work. It is clean,
powerful and reliable.
Write us, advising all
details as to volume,
pressure, etc., and our
engineers will gladly aid
you in solving your
problems.



BUELL MANUFACTURING CO.

CUT YOUR SPEED
TRIM YOUR LOAD
CHECK YOUR AIR
MATCH YOUR DUALS

MAKE YOUR
TIRES LAST
SEIBERLING
Experts in Rubber



CCJ NEWSCAST

(CONTINUED FROM PAGE 276)

Profusely illustrated, the text is spotted with "quickies" in bold-face type, giving the gist of an operation for the more experienced mechanic. For the novice, the "quickies" are amplified by more detailed instructions in smaller type.

Contents of the engine section cover the cylinder block, crankshaft, fly-wheel, camshaft, timing gears, oil pump, pistons, valves, water pump, carburetor, fuel pump, distributor, clutch, and engine specifications. An electrical section deals with starters, generators, etc., and chassis procedures include the transmission universal joint, rear axle, steering, wheel aligning, front suspension, and brakes.

Oil Supply Eases Tank Car Controls

The Office of Defense Transportation has announced the relaxation of three of its restrictions affecting tank cars in line with changes which are taking place in petroleum transportation.

The changes include revocation, effective September 25, of General Order ODT 7, Revised 2, which assigned exclusively to Eastern petroleum service all tank cars in that service. Permits for use of the smaller cars in that service will be no longer required.

Also, effective September 25, Sec. 502,105 of General Order ODT 7, Revised, is so amended that permits are no longer required for the use of tank cars for distances of over 100 miles, instead of 200 miles as formerly.

END

(Please resume your reading on P. 154)



THE COMPLETE LINE
THAT COMPLETELY SATISFIES



THE FITZGERALD MFG. CO., TORRINGTON, CONN.

FITZGERALD GASKETS

IN WAR AS IN PEACE



YOUR SYMBOL OF SERVICE

VITAL TO-

- Low Mileage Costs
- Easy Operation
- Maintained Schedules

SKF

BALL AND ROLLER BEARINGS





Of course not! It's so easy to turn a nut or tighten a bolt that we

take such things for granted. Yet, without dependable tools, how difficult!

Dependable tools. The kind Williams make. Tools that give your customers good long service...that do the job they want done.

Today, as for over sixty years, the Williams trademark is absolute assurance that materials and craftsmanship are the finest obtainable.

J. H. WILLIAMS & CO., BUFFALO 7, N. Y.



DROP-PORGINGS & DROP-FORGED TOOLS

TONS OF PRESSURE at your finger-tips!

Graco specialized lubricating equipment gives tons of pressure at the touch of the finger—power to lubricate thoroughly and properly, convenience to assure that lubricating schedules are maintained.

Trucks continue to be precious and vital equipment. Regular pressure lubrication with Graco precision equipment means more wear and longer life from hard-to-replace parts.

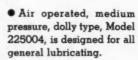
NOW AVAILABLE



 Air operated, medium pressure, truck type, Model 225024, meets the need for portable units on loading docks and yards which present uneven surfaces.



 Famous Champion Lubricator, Model 225002, is 32" high and is ideally suitable for lubricating in places with low head room.





WRITE FOR CATALOG NO. A1194

GRAY COMPANY, INC.

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GS



This new series of dump bodies has greater rigidity and durability than any previous models of the same capacities. Welded construction throughout. Capacities, 2½ and 4 cu. yd. Lengths, 7 to 10 feet. Body width, 72 inches.





The Finest
Truck Body Insulation
YOU CAN'T GET!

DRY-ZERO

• You can't get DRY-ZERO because all the Ceiba fibre that makes DRY-ZERO the outstanding insulation for truck bodies is needed by Uncle Sam for life-saving equipment and aircraft. When peace comes and Ceiba fibre is again available, specify DRY-ZERO in your new equipment. DRY-ZERO is water repellent, vermin-proof, seven times lighter than commercial corkboard, has low thermal conductivity of only .24 B. T. U.

DRY-ZERO CORPORATION

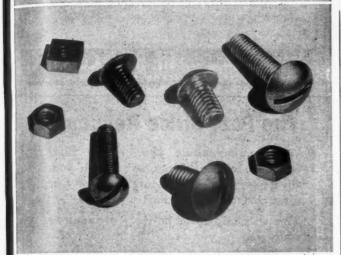
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Остова

Reep your stocks up-to-date



and order oftener

From the beginning of the automotive industry Lamson & Sessions has always been one of the largest producers of Stove Bolts and Machine Screws, of all types War production demands increased our capacity. This means that Lamson Stove Bolts and Machine Screws will be continuously available now and after the war is ended, and in necessary quantities to keep our jobbers' stocks complete and readily available. Your jobber will supply you. Ask for Catalog 42-A if you haven't one on file.

THE LAMSON & SESSIONS COMPANY - CLEVELAND 2, ORIO
General Offices: 1971 West 85th Street

Lamson



cooling systems up to 5 gallon capacity with

RUST MASTER

190

NO FUSS—NO MUSS JUST POUR—NO MORE



Rust Master dissolves rust in the entire cooling system and Rust-proofs for a year — contains nothing harmful.

Six Master dissolves carbon—sludge and gum—relieves sticky valves and frees rings—saves gasoline.



Send for free preventive maintenance cost chart

DE-SLUDGE For 2,000 Miles

Driving With

SIX MASIEI

for only 200



Chemical Co: CHEMISTS
712 BEACON STREET, BOSTON, MASS

THE SILENT PARTNERS OF MOTOR EFFICIENCY



The NEW SIOUX

HEAVY DUTY ELECTRIC DRILLS

Streamlined with a purpose. They're redesigned—shorter, more compact—for greater efficiency, better balance, easier handling and greater convenience in close quarters. All the tried and proven SIOUX developments that have made them outstanding for their endurance, have been retained. SIOUX Heavy Duty Drills include sizes and capacities to meet all needs. For the most efficient and economical method of handling any drill job, you need SIOUX Drills.

Your Jobber Sells Them



ALBERTSON & CO., INC. Sioux City, Iowa, U. S. A.

STANDARD THE WORLD OVER



Checks rear wheels

New Method of Conserving Synthetic Tires!

The Micro-Linor checks wheel-roll with the truck in motion and under load—the only way that ALL misalignment defects can be discovered. This is why it is such an outstanding aid in synthetic tire conservation. Investigate!

Micro-Linor Service Corporation
1629 West Fort Street
Detroit 16, Mich.





MICRO-LINOR

Patented "Tracer-Wheel" Principle



A BACKGROUND OF EXCELLENCE

THAT IS REFLECTED IN OUR GASO-LINE AND OIL LINES FOR THE AUTOMOTIVE MARKET — YOUR ASSURANCE OF OUR INTEGRITY IN WORKMANSHIP AND MANAGEMENT

RESISTOFLEX CORP., Belleville 9, N. J.





- Commercial car maintenance men who know brakes best, specify FLARE HYDRAULIC BRAKE FLUIDS . . . blend perfectly with all original equipment and other first quality brake fluids.
- Laboratory and highway tests prove FLARE is tops in quality. Available in flit type and shop size cans.
- Ask your wholesaler, or write.



The Post Office Requests

—that you include your Postal Zone Number in the signature of all your advertisements, if you are in a city or town that has been zoned.

This will help speed delivery of inquiries addressed to you from the readers of—

COMMERCIAL CAR JOURNAL

A CHILTON Publication

Chestnut & 56th Sts. Philadelphia 39, Pa.

ASOLINE Soling

DIESE

MOTOR TRUCKS ARE BUILT TO "PERFORM BETTER LONGER"

Rugged, heavy duty models for highway transportation, hauling heavy machinery, mining, excavating, quarrying, logging, etc.

STERLING MOTORS CORPORATION MILWAUKEE 1, WISCONSIN

Branches In Principal Cities



MR. TRUCK OWNER:

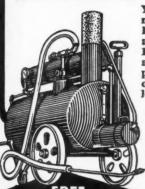
ALMETAL JOBBERS CAN SOLVE YOUR UNIVERSAL JOINT AND DRIVE SHAFT PROBLEMS. CONSULT THEM FOR HELPFUL ASSISTANCE.

THE ALMETAL UNIVERSAL JOINT CO. 1555 EAST 55th STREET · CLEVELAND 3, OHIO

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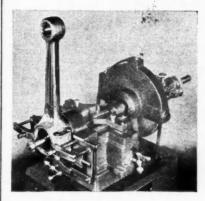
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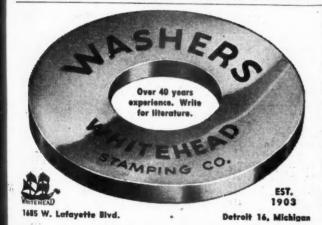
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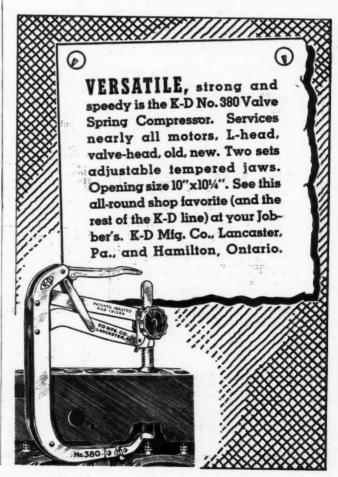
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